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Editorial and Business Offices: 54 East Erie St., Chicago, Illinois, U.S.A.
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EDITOR'S COMMENT

SAUERBRUCH'S discussion of the treatment of empyema (p 11) emphasizes the importance of the primary disease and the fact that in any given case the physician must determine whether toxic absorption or increase of the intrapleural pressure is the more important factor in producing the patient's symptoms. In the first case, prompt and adequate drainage is indicated, in the second, simple aspiration may be the primary indication, and in such cases the removal of even a small quantity of pus often results in rapid improvement in the circulatory symptoms. When persistent fever indicates the continued formation of pus, the question arises as to what method of drainage should be employed. Sauerbruch prefers the closed method, even though in some cases rib resection becomes necessary later. Of those discussing the author's paper, three favored some modification of the closed method of drainage and none advocated rib resection and open drainage. Toennis, of Wuerzburg, an advocate of the closed method of treatment, reported a series of sixty-one cases of empyema in children ranging from one to six years of age with only three deaths, a remarkable record in view of the usual severity of the disease in children.

Kok's clinical and experimental study of the effect of leaving accumulations of blood in the peritoneal cavity after intraperitoneal hemorrhage (p 23) is a valuable contribution to the technique of treatment of ruptured tubal pregnancy. His experimental work on rabbits indicates that autogenous blood left in the peritoneal cavity has no injurious effects and does not produce peritoneal adhesions, on the contrary, it aids materially in the recovery of the anemic animal and hastens blood regeneration. Of great importance in the production of adhesions is the irritation of the peritoneum by vigorous wiping with dry sponges, such as might take place in the attempt to clear the peritoneal cavity of extravasated blood. In six clinical cases in which all of the blood, fluid and clotted, was permitted to remain in the peritoneal cavity, recovery was rapid.

Hogenauer's report of a case in which virulent

tetanus bacilli were found upon a splinter of wood removed from the forearm two and one half months after recovery from the infection (p 49) emphasizes the constant danger of recurrence in individuals once infected. The author states that the active immunity produced is slight and that injected antitoxin is rapidly excreted. Dense scar tissue may prevent resorption of toxin or the organism may for a time secrete little or no toxin. Of great practical importance is the administration of antitetanic serum before secondary operations are performed.

Peacock's study of twenty-one cases of perinephritic abscess (p 33) emphasizes the importance of renal and perirenal suppuration as a cause of persistent septic symptoms of obscure etiology. He emphasizes the fact that particularly in cases of extrarenal origin urinary symptoms may be slight or absent, and that abdominal or costovertebral tenderness may be the only localizing symptom of a persistent and serious infection.

Wilmoth's report of a case of extensive necrosis of the foot due to an indelible pencil injury (p 48) is an interesting addition to the small group of such cases which have been previously reported. The fact that chemical necrosis due to such a cause can persist for weeks and months, and that complete excision of the affected area is necessary for cure is not always recognized, and too often particularly in the case of the hand, loss of vital structures occurs because surgical treatment is limited to repeated incisions for drainage while the necrotic process slowly continues.

Hartfall and Haseltine's report of a case of acute osteomyelitis of the spinous process of a dorsal vertebra going on to dural perforation and death (p 39), Strachan's review of the various methods of technique of radium application for carcinoma of the uterus in use in some of the leading gynecological clinics (p 24) and Blair and Brown's discussion of the use of large split skin grafts of intermediate thickness (p 48) are a few of many of the particularly interesting and helpful papers which are abstracted in this month's issue of the INTERNATIONAL ABSTRACT OF SURGERY.

INTERNATIONAL ABSTRACT OF SURGERY

JANUARY, 1930

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Schueck F. Head Injuries. A Report of 300 Cases
(Kopfverletzungen. Bericht ueber 300 Faelle) Arch
klin Chir 1928 cliv 77

The author states that considerable progress has been made in the treatment of head injuries particularly in America. He discusses in detail the various causes of such injuries, the diagnosis, the treatment (especially lumbar puncture) and the end results.

The most common causes are street accidents and less common causes industrial accidents. Males sustain such injuries more frequently than females.

The injuries are divided into those with and those without involvement of the bony skull, and again into those with and those without involvement of the brain. It is often very difficult to determine definitely whether concussion or contusion of the brain is present alone or is complicated by fracture of the base of the skull. The differences between concussion and contusion of the brain are merely quantitative.

In all cases of severe head trauma intracranial pressure with compression of the brain plays by far the most important rôle. It may occur after depressed fractures but is associated most commonly with extracerebral or intracerebral hemorrhage and with meningitis. In extracerebral hemorrhages the middle meningeal artery is most frequently responsible. The diagnosis which is often difficult is considerably easier when unilateral disturbances are present and is facilitated especially by the roentgen picture. Most diagnostic difficulties are caused by intracerebral hemorrhage and swelling of the brain or meningitis developing later. In the presence of brain swelling trephination to relieve tension seldom has good results.

One of the chief symptoms following cranial injury is a disturbance of consciousness. The author believes that loss of consciousness is the result of compression of the brain stem. This theory is supported by the fact that, in the cases reviewed, disturbances of consciousness were most common in

those in which a fracture of the base of the skull was probable.

In general no methods of examination associated with danger such as lumbar, cisternal, and ventricular puncture should be used to confirm the diagnosis. Lumbar puncture should not be employed until the later stages. In the cases reviewed disturbances of the cranial nerves were observed only when there was a simultaneous fracture of the base of the skull. So called cerebral glycosuria appeared in a cases.

In a total of 272 cases of head injury (gunshot wounds of the head excluded) the mortality was 11.8 per cent (32 deaths). This mortality figure is to be accepted with a certain reserve. According to other statistics the mortality of fractures of the base of the skull is about 40 per cent.

When there is compression of the brain the best treatment consists in stopping the extracerebral hemorrhage by acupressure after trephination. When such a diagnosis is made with certainty immediate operation is indicated. The author does not approve of a symptomatic decompression operation in head injuries in which a fracture of the base of the skull or an intracerebral injury with corresponding symptoms dominates the picture. His position is the same as regards prophylactic trephination in traumatic meningitis. Experiences with lumbar puncture in foreign countries are contradictory as to results. Recently magnesium sulphate, sodium chloride solution and dextrose have been given to reduce intracranial pressure in suitable cases.

Follow up examinations were made in about 50 per cent of the cases reviewed by the author. About half of the men and more than half of the women re-examined were free from symptoms. Of the 76 patients with persistent disturbances 6 had paralysis of a cranial nerve and 1 was suffering from cortical epilepsy.

Hook (Z)

McKenzie D. Thrombophlebitis of the Jugular Bulb. Proc Roy Soc Med Lond 1929 xiv 1285

In cases of lateral sinus thrombosis reviewed by the author the mortality was 40 per cent. Jugular

bulb thrombosis may be primary or secondary. When it originates in the bulb the infection enters the bulb directly from the tympanic cavity by way of the venules and the condition is not necessarily preceded by mastoiditis. In secondary jugular bulb thrombosis the bulb becomes infected from the lateral sinus. The condition tends to spread. When it is primary in the bulb it may involve the lateral sinus.

The diagnosis is often impossible before operation but the condition should be suspected when there are signs of cavernous sinus or jugular vein thrombosis and lymphatic glands high up under the sternomastoid muscle are enlarged.

In the treatment ligation of the jugular above the deep thyrofacial with drainage from the upper sectioned portion the passage of a curette upward to the bony impingement and downward through the incised lateral sinus and syringing may be sufficient. If it is not, operation on the bulb is necessary.

The author describes the surgical anatomy of the bulb in detail. In the method used by him to approach the bulb the structures intervening between the neck incision made to ligate the jugular and the mastoid incision are dissected and the bone of the base of the skull that forms the floor of the horizontal limb of the lateral sinus is removed. The sinus bulb and vein are then exposed in one long gutter by removal of the lip or crest of the bulb and the overlying structures. W. N. ROWLEY M.D.

Hamalainen M. Ankylosis of the Jaw (Ueber Kieferanchylosen) *Acta chirurg Scand* 1929 luv 493

The author reports seven cases of ankylosis of the temporomaxillary joint which have been treated at the surgical clinic in Helsingfors since 1910. In all the condyle of the lower jaw or the upper part of the ascending ramus was resected and a free flap of fat then interposed. No special after treatment was given as the movements of mastication were sufficient to prevent a new ankylosis.

In cases of unilateral ankylosis the undiseased side was not ankylosed even when it had been inactive for many years. Consequently the patient was able to open his mouth immediately after the obstruction had been removed. In some cases the contraction of the temporal muscle necessitated chiselling of the coronoid process. In a very difficult case bleeding from a venous plexus could be controlled only by tamponing and closing the skin. Five days later the tampon was removed and the arthroplasty performed successfully. In cases in which it is difficult to obtain haemostasis the author therefore regards it as advisable to perform the operation in two stages if the bleeding does not come from the internal maxillary artery rather than to risk a relapse from a hematoma.

In six of the cases reviewed the primary result was good. In the only case in which the ankylosis recurred the cause of the recurrence was evidently a hematoma. Later examinations showed that the

results in the six cases with primary healing had remained good and that the mobility of the temporomaxillary joint had increased. The micrognathia had not improved but was of merely cosmetic importance.

Stapelmoor S. von Crepitation of the Temporomaxillary Articulation and Habitual Luxation of the Jaw (Sur les craquements de l'articulation temporo maxillaire et les luxations habituelles de la mâchoire) *Acta chirurg Scand* 1929 luv, 1

In a review of the literature the author was able to find only fifty six cases of the condition of the temporomaxillary articulation which is associated with crepitation or habitual luxation of the jaw. Nevertheless he believes it is quite frequent especially the form manifested only by crepitation. He reviews sixty nine cases—the fifty six reported in the literature and thirteen others. The cases are divided into three groups as follows:

(Group 1) Twenty seven cases with only crepitation of the jaw.

(Group 2) Thirty five cases of habitual luxation with the mouth wide open.

(Group 3) Seven cases of intermittent luxation with the mouth nearly or half closed.

The condition developed before the thirtieth year of age in 91 per cent of the cases and before the twentieth year of age in 49 per cent. It was present before the thirteenth year in only three cases and before the end of the first year in only one case. One patient was fifty two years of age when the disturbance was first noted.

Sixty seven per cent of the patients were females.

In 10 per cent of the cases the condition was unilateral. Among the males it was as frequently unilateral as bilateral. In the females it was unilateral in 70 per cent of the cases. The left side was affected twice as frequently as the right side.

The causes include a primary cause and a precipitating cause but the majority of the cases in the literature are reported so briefly as to suggest that the condition became manifested suddenly or without cause. In 20 per cent of the cases it was ascribed to chewing on a hard substance, yawning, convulsive laughter or a blow. In several cases it developed after an infection or dental treatment. In three of the author's cases the cause was an anomaly in the position or number of the teeth. In two cases reports a congenital predilection position such as general clownism was mentioned. Nervous affections such as epilepsy, dementia praecox and parkinsonism have also been suggested as the cause of jaw disturbances. Influenza and other infectious conditions may produce an arthritis with crepitation. In two cases arthritis deformans was given as the cause. It was impossible to discover any relation between the condition and variations in the depth of the glenoid cavity, the height of the zygomatic tubercle or the shape or size of the condyles.

In nearly all operations the meniscus or its attachments were found changed.

In cases of Group 1 the symptoms may cease spontaneously. When they do not, and when they become more marked, operation is necessary as in the cases of Groups 2 and 3. The operation of choice is that described by Konjetzny. In cases of Groups 1 and 3 simple extirpation of the meniscus may be sufficient. The author rejects the use of prostheses and injections as the treatment of choice. The incision may be made by various methods such as those of Kraske, Kocher and Lexer.

Von Stapelmohr has operated upon eight cases. In three the operation was bilateral. A good functional and cosmetic result was obtained in all. The longest period of observation was three years and four months and the shortest one month.

In a case belonging to Group 3 which was operated upon by Hyblinette only extirpation of the meniscus was done. Five years later the result was still good. Konjetzny has had six cases under observation for longer than four years, two of them for eight years.

Hauenstein K. Osteomyelitis of the Jaw and Its Relation to the Teeth (Ueber die Osteomyelitis der Kiefer und ihr Zusammenhang mit dem Zahnsystem). *Vjschr Zahnheilk* 1928 xlv 353-606.

The author describes in detail the pathological-anatomical process in the periosteum, bone and bone marrow in the different forms of osteomyelitis with particular regard to the conditions in the jaw and the pathogenesis and clinical picture of acute osteomyelitis of the infectious hematogenous variety (spontaneous primary form and secondary form), the traumatic variety and the variety caused by the extension of infection.

The more frequent occurrence of osteomyelitis of the jaw is explained by the great importance of the anlagen of the teeth in the disease (the low resistance of embryonic proliferating tissue to injury and its altered blood supply and vascular relations). In the spontaneous primary form of the condition the numerous anlagen of the dental pulp which are present in the child's jaw provide a remarkably favorable soil for the colonization of bacteria from the blood stream on account of their altered vascular supply and blood circulation and their peculiar cell combinations. The same circumstances favor the secondary form of osteomyelitis in childhood.

Just as the occurrence of osteomyelitis is influenced by the condition of the dental pulp, the course and the complications of the disease are determined largely by the anatomical conditions in the child's jaw. The latter differ in the upper and lower jaw. As a rule the infection takes place locally from the buccal cavity from the teeth. Of this type is Zarfl's so called sequestering inflammation of the dental pulp of earliest childhood.

The peculiarities of the young jaw which are determined by the anlagen of the teeth do not permit long delay of treatment. Early operative evacuation with relief of tension should be done with sacrifice of tooth anlagen that stand in the way.

After the operation, the mouth should be frequently rinsed.

Secondary osteomyelitis occurs more often in the lower jaw than in the upper jaw. Any general infectious disease especially influenza, may be the cause. The clinical picture varies accordingly.

Of the traumatic types of osteomyelitis those caused by gunshot wounds and those caused by surgical operations are of first importance. The forms of osteomyelitis due to extension of infection from diseased teeth may have their origin according to Perthes in caries, marrow gangrene, an alveolus exposed by tooth extraction, the gum or a wound of the periosteum of the jaw. Chronic osteomyelitis of the jaw is based on Kaufmann's three forms of osteomyelitis—rarefying osteitis or inflammatory osteoporosis with caries of the bone, chronic intracostal proliferation of granulations with dissolution of the bone, and osteosclerosis or osteitis ossificans.

The organism most frequently responsible for osteomyelitis of the jaw is the staphylococcus pyogenes aureus. Streptococci and pneumococci cause somewhat different morphological and clinical pictures.

In the indecision that still obtains regarding the ideal treatment of osteomyelitis the danger of rupture into the mandibular canal in the lower jaw and into the maxillary sinus in the upper jaw speaks against too long delay of wide opening of the focus. The approach is usually through the mouth. Conduction or infiltration anesthesia is always used. Regeneration occurs chiefly from the periosteum. No fixed rules can be given as to the preservation of endangered teeth. The decision must be made according to the indications in the particular case. It should be borne in mind however that in osteomyelitis even very loose teeth may become firm again. GEOFF SCHMIDT (Z)

Bergensfeldt E. The Use of a Prosthesis in a Case of Unilateral Exarticulation of the Lower Jaw for Adamantinoma and a Brief Review of the Methods Employed for the Correction of Defects of the Lower Jaw (Prothesenbehandlung Fall nach halbseitiger Unterkieferexarticulation wegen Adamantinom, nebst einer kurzen Uebersicht ueber die Behandlungsmethoden fuer Ersatz von Unterkieferdefekten). *Acta chirurg Scand* 1929 lxxv 473.

After giving a brief review of the various methods which have been used to correct defects in the lower jaw—the use of a free intra oral splint, the use of an implantation splint, osteoplasty with grafts of bone and soft parts and free bone grafting (only the first and last methods can be considered in cases of exarticulation and extensive resection)—the author reports a case of adamantinoma of the mandible with exarticulation of half of the lower jaw in which a free intra oral splint was applied in the after treatment. The operative prosthesis was a Schroeder splint of hard rubber. The permanent splint was provided with the hinged joint described by Ernst. A good result was obtained.

EAR

Ridout C A S The Acute Ear *Proc Roy Soc Med Lond*, 1929 xxi 1292

The author discusses the ear conditions which the general practitioner should refer to the otologist. The cases are divided into those of acute and those of chronic infection. The acute conditions are simple acute otitis media otitis combined with acute mastoiditis and complications furunculosis and acute ear trouble in specific fevers. The chronic conditions are chronic suppurative otitis media complicated by acute mastoiditis chronic otitis associated with radiating headache and chronic otitis showing signs of cerebral or cerebellar abscess.

GEORGE R. McATELL M D

Tesone P Bilateral Syphilitic Mastoiditis (Mastoiditis syphilitica bilateral) *Rev oto-neuro-otol* 1929 iv 277

The author reviews the few cases of syphilitic mastoiditis that have been reported in the literature and reports a case of his own.

His patient was a man forty seven years of age who at eighteen years of age acquired gonorrhea and at the age of twenty developed a chancre which was followed first by suppurative adenitis and later by an exanthem with intense headache. Treatment with mercury had to be stopped on account of intolerance. Some time later the patient developed a torpid orchepidymitis and at the age of thirty two a gumma of the palate. He married at the age of thirty six years and had four children. As the mother was watched and treated during her pregnancies the children are apparently well.

The illness for which the patient consulted the author began in the middle of January with light pain in the right retroauricular region. The pain soon involved the whole temporooccipital region and became so intense that it prevented sleep. Two weeks later a hard swelling appeared back of the ear. This was treated by the application of ice and by protein and vaccine therapy. Because of the history of syphilis injections of mercury and bismuth were also given. The swelling extended to the neck and became fluctuating. On February 19 an incision was made back of the ear to drain the pus and a focus of bone necrosis that was found was treated. The temperature and pain then decreased but a few days later a fever of 39.5 degrees C developed with vomiting. Mastoidectomy was then performed. The mastoid was found transformed into a necrotic cavity. The operation was followed by uneventful recovery. In the after treatment mercury and bismuth were given.

A month later mastoiditis developed on the other side and a second mastoidectomy became necessary. After this operation treatment with iodobismuthate of quinine and neosalvarsan was given. The patient is now in excellent condition.

The syphilitic nature of the mastoiditis was evidenced by the history of syphilis the specificity of

the pain, and the fact that hearing was intact and the lesion was bilateral the causative disease being systemic.

AUDREY G MORGAN M D

NOSE AND SINUSES

Sewall E C and Hunnicutt L Cytological Examination of the Antrum A Review of Cases to Determine the Relationship Between the Cytological and the X Ray and Pathological Observations *Arch Otolaryngol*, 1929 x 1

The authors present an analysis of the results obtained from a cytological examination of the antrum in fifty five patients. An effort was made to establish the relationship between the cytological, the roentgenological and the pathological observations. The material for cytological examination was obtained by puncture of the antrum with a No. 16 straight Luer needle through the inferior meatus. If fluid was not obtained at the first attempt a sterile warmed solution was injected into the antrum until some of it could be withdrawn. The solution withdrawn in this manner was centrifugized and a smear made from the sediment.

The relationship between the cytological roentgenological, and operative findings and those of the microscopic study of the antral lining removed at operation is shown in tables. The indication for operation did not depend on positive cytological findings alone. Other factors were considered.

The test water, containing cytological evidence of disease, was macroscopically clear in 58 per cent of the cases. Shreds of mucus were discovered in 54 per cent of the total number of cases. Ordinarily these shreds would probably have been missed.

The authors conclude that polymorphonuclear leucocytes found in a sinus are evidence of infection. Chronic sinusitis is indicated by the persistence of these cells in spite of treatment. Mononuclear leucocytes are found in low grade inflammation and in the phase of resolution. If mononuclears are found for long periods on repeated puncture, a diagnosis of low grade sinusitis is justifiable.

W M PATON M D

MOUTH

Herren P Cancer of the Tongue (Ueber Zungenkrebs) *Ann Chir Arch*, 1928 xvi 357

In the oncological institute conducted by the author there were treated in the seven year period from 1921 to 1928 sixty eight cases of affections of the tongue. Among these there were thirty two cases of lingual cancer in seven of which the floor of the mouth was involved, two cases of ulcer, one case of actinomycosis, thirteen cases of tuberculosis in one of which there was involvement of the floor of the mouth, one case of localized papillitis and ten cases of other conditions (glossitis etc.). The total number of operations on the tongue was thirty three. Four patients (12.1 per cent) died after the operation. Twenty five were operated upon for lingual cancer.

with a mortality of 12 per cent. The removal of the tumor was performed through the mouth possibly with the assistance of an incision in the cheek. The alveolar process on the affected side was resected and the tumor then excised through the neck without preventive ligation of the blood vessels. Submental and cervical lymph glands were removed at the same time or from ten to twenty days later.

On the basis of his extensive experience in the treatment of malignant tumors the author comes to the following conclusions:

Cancer of the tongue is a rare disease, particularly in women. It develops on the basis of chronic inflammatory irritation. Leukoplakia of the tongue in smokers is an important etiological factor. The most common form of cancer of the tongue is cancer keratodes which invades the lymphatics very early. Because of the anatomical peculiarities of the lymph vessels of the tongue and involvement of the lymph glands it is necessary to remove all of the connective tissue in the floor of the mouth and along the course of the vessels in the neck at the time of operation or to treat this region later with strong doses of radium.

Early diagnosis may be made from examination of the patient. Biopsy, particularly in the early stages is not always of great help. Precarcinomatous lingual affections should be treated early by radical excision.

G. AUROV (Z)

NECK

Talman J. The Carotid Glands and Their Tumors (Ueber die Carotiddrüsen und ihre Geschwülste). *Arch. chir. tech.* 1928, 21, 469.

In the first part of this article the author discusses the macroscopic and microscopic characteristics of the carotid glands and in the second part their tumors.

The carotid glands belong as is known to the sympathetic-adrenalin system. They are glands of the size and shape of rice grains which lie at the bifurcation of the carotids and are sometimes present in pairs. They consist of alveoli made up of clear cells from 15 to 30 micra in size enclosed in a connective tissue capsule. They contain fibrous tissue, numerous nerves and vessels and, in young persons, chromaffin cells.

To the 177 cases of carotid tumors reported in the literature the author adds a case of his own. Such growths occur at all ages and in both sexes. They are usually egg shaped, smooth or slightly nodular and of variable (soft to hard) consistency. In their microscopic structure they reproduce the structure of a normal gland and therefore seem to be strumata rather than true tumors. They lie at the bifurcation of the common carotid parallel with the vessel and sometimes push the terminal branches apart. They often show a definite pulsation and they are insensitive to pressure. Their development is extremely slow requiring from five to twenty years. A constant sign of their presence seems to be a dilatation of the common carotid artery below the tumor. In

the differential diagnosis it is necessary to rule out lymph gland swellings (tuberculosis, etc.), carotid aneurism, branchial tumors, vessel sheath tumors, aberrant goiters, and tumors of the parathyroids.

The treatment is operative removal. Operation is attended with the danger of hemorrhage and vessel and nerve injury. In 98 surgically treated cases the mortality was 22 per cent. Eight of the deaths were due to cerebral anemia, 5 to pneumonia, 3 to hemorrhage and 1 to air embolism.

The prognosis with surgical treatment aside from the high mortality is not favorable. Hemiplegias, difficulties in swallowing, or vocal cord paralysis often develop. Regional metastasis is very rare and distant metastasis and cachexia have never been observed.

The author's case was that of a sixty-year-old woman with an egg shaped carotid tumor on the right side which had developed over a period of twelve years and in the last three years had caused severe pain in the ear, neck, and temple. As preparation for the operation the common carotid artery was compressed for from twenty to ninety minutes twice daily for three weeks. Removal of the tumor was effected by excision of a portion of the common carotid artery and its end branches and a part of the vagus nerve. Recovery resulted. When the patient was discharged she showed a narrowing of the right pupil, slight ptosis and paralysis of the right vocal cord. The removed specimen measured 8 by 5 by 2.5 cm. On microscopic examination it was found to be a struma (hyperplasia) of the carotid gland.

G. AUROV (Z)

Fowler C. H. and Hanson W. A. The Surgical Anatomy of the Thyroid Gland with Special Reference to the Relations of the Recurrent Laryngeal Nerve. *Surg. Gynec. & Obst.* 1929, 20, 59.

This report is based on dissections of 200 thyroid glands and 400 recurrent laryngeal nerves in cadavers. Special attention was paid to the relation of the deep cervical fascia, inferior thyroid artery, and recurrent laryngeal nerve.

It was found that the so called capsule of the thyroid gland formed from the middle or pretracheal layer of the deep cervical fascia is not as definite an anatomical entity as it is generally assumed to be.

The indirect course of the recurrent laryngeal nerve is explained by the embryological development of the region. This nerve was found to be within the capsule of the thyroid when the latter was well developed.

The relation between the nerve and the gland is closest on the posterior surface of the middle third of the lateral lobe of the thyroid where the nerve is in direct contact with the gland. In 262 cases the recurrent nerve passed posterior to the main branches of the inferior artery, in 104 cases it passed anterior to them and in 34 cases it passed between them. The position of the recurrent nerve in relation to the vessels and adenomatous and sub-

sternal lobes varies greatly. The authors were unable to demonstrate any change in the position of the nerve relative to the gland from anterior displacement of the lateral lobes.

The relation between the external laryngeal branch of the superior laryngeal nerve and the superior thyroid artery and upper pole of the thyroid gland is so intimate as to suggest that it may have a bearing on postoperative vocal disturbances.

JOHN H. GARLOCK, M.D.

Thompson W. O. and Thompson P. K. The Significance of a Low Basal Metabolism Following Thyrotoxicosis. *Am J Surg* 1929 vii, 48.

The authors review sixty-six cases showing a basal metabolic rate below -25 per cent after treatment for toxic goiter. In only eleven were there signs and symptoms characteristic of definite myxedema. In three cases the myxedema was temporary, and in eight presumably permanent.

It is considered significant that in one of the cases of temporary myxedema the condition was shown to be the result of the postoperative administration of iodine.

The authors emphasize that in the interpretation of the degree of elevation of the basal metabolism in thyrotoxicosis the level of the patient's normal metabolism must be taken into consideration.

In most of the cases of myxedema reviewed the basal metabolic rate was below -25 per cent. In all of those in which the low metabolism could be regarded as normal the rate was above -25 per cent.

W. N. ROWLEY, M.D.

Fulle G. B. C. and Galbissi, F. The Treatment of Parathyroparal Tetany with Grafts of Fixed Parathyroid (Terapia della tetania paratiropriva con inclusioni di paratiroide fissate). *Sperimentale* 1929 lxxviii, 187.

According to Maragliano a part of the endocrine effect noted after the grafting of glands is due to the

hormone contained in the fresh tissue and it is doubtful whether similar effects can be obtained by the grafting of fixed tissue. To settle this question the authors made experiments on dogs which show a typical and quite severe parathyroparal syndrome following the removal of the parathyroid. After parathyroidectomy, parathyroids fixed with 10 per cent formalin were grafted into the subcutaneous tissue. In one group of animals the parathyroids of the animals themselves were used; in a second group the parathyroids of other dogs; and in a third group the parathyroids of cattle. The protocols of the experiments are reported in detail.

The results show that such grafts have a decided effect on the tetany produced by removal of the parathyroids but the grafting of fixed parathyroid tissue even if repeated several times, does not prevent the ultimate death of the animal from parathyroparal cachexia. No matter whether the graft is autoplasmic, homoplasmic or heteroplasmic, it does not have as intense or as durable an effect as an autoplasmic or a homoplasmic graft of fresh parathyroid. However the effect of fixed parathyroids is much better than the effect of the injection of parathyroid extract prepared according to Collip's method which is generally conceded to be beneficial in parathyroparal tetany.

ANDREW G. MORROW, M.D.

Nylander P. E. A. Parathyroid Cysts of the Neck (Ueber parathyreoidale Halszysten). *Archiv f. klin. u. exp. Med.* 1929 lxxv, 539.

The author describes a cyst of the neck which developed slowly between the angle of the jaw and the sternocleidomastoid muscle and resembled clinically a typical congenital lateral cyst of the neck. The patient was a boy sixteen years of age. The cyst wall was lined by columnar epithelium. It contained a considerable amount of muscular tissue and a small amount of parathyroid tissue. No lymphatic tissue could be found.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Boschl G Serra A and Maccanti A Acute Hydrocephalus Treated by Catheterization of the Third Ventricle through the Corpus Callosum Cure (Idrocefalo acuto curato col cateterismo del terzo ventricolo attraverso il corpo calloso guarigione) *Riforma med* 1929 xlv 737

The patient whose case is reported was a boy four teen months of age who had just begun to talk and walk. He had had no illness except fever for 7 day or two four months previously. There was no history of syphilis. The illness reported by the authors began about twenty days before the patient's admission to the hospital with a high fever which lasted about twelve days. The patient soon became unable to hold his head up and a convergent strabismus that had been present previously became worse. When the child was admitted to the hospital he had a large head with an oömpic forehead and open fontanelles. His head drooped. Convergent strabismus was present. Examination revealed conjugate clonus upward and a little to the left, weakness of the left arm, active tendon reflexes and a bilateral Babinski reaction which was not constant. The patient was unable to stand or speak.

On roentgen examination of the skull the outline at the base was obscure and the bones of the skull were not very opaque. The fontanelles appeared abnormally large.

Following lumbar puncture the pressure fell rapidly. The fluid showed a slight increase of albumin. The Nonne Apelt test was negative. After a few days there was no longer any clonus of the eyes.

On the basis of a diagnosis of hydrocephalus the corpus callosum was punctured by the Anton Bramann technique. A large amount of fluid was discharged in a jet.

Two weeks after the operation the child was able to hold up his head and to walk with aid as well as before the illness. After a year he was able to speak normally, also to walk alone, though he fell rather readily. His skull was slightly larger than after the operation, but the roentgen picture showed improvement in the hydrocephalus. The outline at the base was clear and the bones showed almost normal density.

The authors conclude that this was a case of non communicating hydrocephalus probably due to hereditary syphilis. A number of operations have been proposed for the condition. While puncture of the corpus callosum is not without danger the authors' case shows the good results it may give.

AUDREY C MORGAN, M.D.

Arce J Balado M and Franke E A Case of Actinomyces of the Brain (Un caso de actinomicosis cerebral) *Arch argent de neurol*, 1929 xv 88

Actinomyces involving the nervous system is very rare. Involvement of the brain usually occurs by contiguity though a few cases of distant metastasis are on record. The symptoms are those of meningitis with more or less intense irritation of the cortex and with or without abscess formation. The brain abscess develops slowly. Its most pronounced signs are somnolence, loss of appetite, and emaciation.

The prognosis is serious. Since in the cases in which recovery resulted the microorganisms were not found in the spinal fluid the diagnosis may have been incorrect.

When a diagnosis of brain abscess is made trephination is indicated, but in some instances as in the case reported by the authors the presence of multiple abscesses may render operation difficult.

The authors' patient was a man thirty three years of age who had been engaged in the harvesting of grain. His illness began with swelling of the gums on the right side for which his dentist had extracted the lower third molar on that side. Two months after the extraction of the tooth a swelling appeared on the right cheek in front of the external auditory meatus. When this was incised blood and pus were evacuated. As the swelling extended downward along the border of the maxilla a number of incisions were made. Three months later the patient was able to return to work. He was then well for two months, but at the end of that time his right cheek again became swollen and he experienced difficulty in opening his mouth. Another incision was then made in front of the tragus. The pain and swelling decreased but the trismus persisted. Later the swelling extended to the right temporal region and the trismus grew worse. On the patient's admission to the hospital the swelling in the right temporal region was incised. Microscopic examination of the pus revealed actinomyces. Somnolence and signs of meningitis developed and death resulted.

Autopsy showed two abscesses of the right hemisphere, one near the fissure of Sylvius and the other in the first temporal convolution. The microscopic findings are described in detail and shown in photomicrographs, some of which are colored. The report is supplemented by a very extensive bibliography.

AUDREY C MORGAN, M.D.

Dandy W E Operative Relief from Pain in Lesions of the Mouth Tongue and Throat *Arch Surg* 1929 xix 143

The development of an operative attack on the trigeminal and glossopharyngeal nerve at the brain

sternal lobes varies greatly. The authors were unable to demonstrate any change in the position of the nerve relative to the gland from anterior displacement of the lateral lobes.

The relation between the external laryngeal branch of the superior laryngeal nerve and the superior thyroid artery and upper pole of the thyroid gland is so intimate as to suggest that it may have a bearing on postoperative vocal disturbances.

JOHN H. GARLOCK, M.D.

Thompson W. O. and Thompson P. A. The Significance of a Low Basal Metabolism Following Thyrotoxicosis. *Am. J. Surg.* 1929 vii 43

The authors review sixty-six cases showing a basal metabolic rate below -15 per cent after treatment for toxic goiter. In only eleven were there signs and symptoms characteristic of definite myxedema. In three cases the myxedema was temporary, and in eight presumably permanent.

It is considered significant that in one of the cases of temporary myxedema the condition was shown to be the result of the postoperative administration of iodine.

The authors emphasize that in the interpretation of the degree of elevation of the basal metabolism in thyrotoxicosis the level of the patient's normal metabolism must be taken into consideration.

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W. A. ROWLEY, M.D.

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According to Maragliano a part of the endocrine effect noted after the grafting of glands is due to the

hormone contained in the fresh tissue and it is doubtful whether similar effects can be obtained by the grafting of fixed tissue. To settle this question the authors made experiments on dogs which show a typical and quite severe parathyroidoprival syndrome following the removal of the parathyroids. After parathyroidectomy parathyroids fixed with 10 per cent formalin were grafted into the subcutaneous tissue. In one group of animals the parathyroids of the animals themselves were used. In a second group the parathyroids of other dogs and in a third group the parathyroids of cattle. The protocols of the experiments are reported in detail.

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ANDREW C. MORGAN, M.D.

Nylander P. E. A. Parathyroid Cyst of the Neck (Ueber parathyroidale Halszysten). *Arch. chirurg. Scand.* 1929 lxxiv 539

The author describes a cyst of the neck which developed slowly between the angle of the jaw and the sternocleidomastoid muscle and resembled clinically a typical congenital lateral cyst of the neck. The patient was a boy sixteen years of age. The cyst wall was lined by columnar epithelium. It contained a considerable amount of muscular tissue and a small amount of parathyroid tissue. No lymphatic tissue could be found.

The hæmorrhages, which are not infrequent, are probably in some cases at least, of traumatic origin.

Hurst's article is illustrated by a large number of plates and photomicrographs of the lesions in various tissues in the different stages of the disease.

ALBERT S. CRAWFORD, M.D.

Kortzeborn, A. Laminectomy in a Case of Angioma Racemosum of the Spinal Cord. Death Later from Aneurism of a Cerebral Artery Due to Fungus Disease (Laminektomie bei Angiome racemosum des Rückenmarkes. Späettod an Schimmelpilzaneurysma einer Hirnarterie). *Zentralbl. f. Chir.* 1929, p. 863.

Angioma racemosum of the spinal cord is characterized by a protracted course and periodic variations in the symptoms due apparently to variation in the filling of the vessels. When tensely filled the vessels produce progressive disturbances of function through direct pressure from without or alterations in the circulatory conditions within the spinal cord.

The condition can seldom be diagnosed either neurologically or myelographically before operation. As a rule it is necessary to be satisfied with the diagnosis 'a space limiting process of the spinal cord.'

The three possibilities of myelographic examination are (1) a negative myelogram (Juengling's case) (2) arrest of the principal mass of the medium in the vascular loops (Perthes case) and (3) passage of the main mass with the arrest of small drop-lets (the author's case).

In the Kortzeborn's case the vascular mass was exposed and removed through a laminectomy opening extending from the eighth dorsal to the first lumbar vertebra. Primary healing occurred. After the operation movement was improved only in the ankle joints. Ten weeks later death resulted from hæmorrhage from an aneurism of an artery of the base of the brain due to fungus disease. The author believes that the racemose angioma probably had no relation to the fungus disease except that it lowered the patient's resistance to the parasite.

WERNER BLACK (Z)

stem for trigeminal and glossopharyngeal tic douloureux is now turned to advantage in the relief of pain originating in the peripheral branches of these nerves from such conditions as chronic ulcer radium burns and malignant lesions of the tongue and throat. However, this operative procedure is intended only for selected cases. Chronic lesions often overlap the fields of both nerves, necessitating the exclusion of both nerves.

The suboccipital approach allows exposure and section of both nerves because of their close proximity at the brain stem. The sensory root of the trigeminal can be reached much more easily by this route than by the older approach along the floor of the temporal fossa (Hartley Krause). The motor branch of the trigeminal is not endangered and there is almost complete absence of the corneal redness and ulceration which are associated with the use of the Hartley Krause method.

The after effects of the operation are limited to the loss of sensation. In three cases in which the glossopharyngeal nerve alone was cut there was no appreciation of the sensory loss although the objective sensory loss was complete. In seven of ten cases sensory loss in the trigeminal area was only partial, the preservation of some sensation being perhaps an indication of sensory fibers accompanying the motor branch which is always left intact.

Section of the glossopharyngeal nerve is indicated whenever the sensory field of this nerve is invaded by a malignant chronic or incurable lesion. Alcohol injections are contra indicated because of the close association of the nerve with the vagus jugular vein, and carotid artery. Peripheral section is more dangerous than intracranial section because of the proximity of the vagus. The vagus has always been injured when section or avulsion of the glossopharyngeal nerve in the neck has been attempted. Peripheral section permits regrowth of the nerve fibers which is impossible when intracranial section is done.

Unilateral involvement of the trigeminal nerve alone allows either alcohol injection or partial or total intracranial section of the sensory root. Patients with rapidly growing lesions and a short life expectancy are best treated by alcohol injections whereas those with lesions of longer duration are more effectively relieved by intracranial section.

When both the fifth and ninth nerves are involved the only logical course is intracranial division of both nerves. This must be done by the cerebellar route since the ninth nerve is not approachable through the temporal route. The cerebellar route prevents interference with the ocular and motor branches such as occurs in the Hartley Krause method.

Bilateral section of the fifth sensory roots has been performed for bilateral trigeminal neuralgia but the additional section of both ninth nerves might be impractical because of the loss of the gag

reflex. Bilateral alcohol injection of the inferior maxillary nerves is precluded because paralysis of both motor branches of the trigeminal would make swallowing impossible. Division of either the ninth or the fifth nerve or of both on one side is of advantage also in permitting the application of radium to malignant lesions without pain either immediately or subsequently. E S PLATT M.D.

SPINAL CORD AND ITS COVERINGS

Fairbrother R W The Significance of Coccal Organisms in Experimental Poliomyelitis *J Path & Bacteriol* 1930 xxxi 435

Hurst E W The Histology of Experimental Poliomyelitis *J Path & Bacteriol* 1929 xxxi 457

FAIRBROTHER reports investigations the purpose of which was to determine the origin and relationship to poliomyelitis of the coccal organisms found in various tissues of monkeys examined in different stages of that disease. The cause of poliomyelitis has been sought by many investigators over a period of more than two decades. Some have concluded that the cocci isolated have a definite etiological relationship to the condition and others that they are merely terminal invaders or air borne contaminants entering at some time during the technical procedures.

In the author's studies three virus strains were used—a weak an active and a very powerful strain—all obtained from the Rockefeller Institute. The fifty monkeys used were divided into the following four groups: (1) those examined during the initial stage of the disease (2) those examined during the late stage (3) those that died from the disease and (4) healthy animals and animals suffering from infections other than poliomyelitis which were used as controls.

The author concludes that the cocci discovered in the animals with poliomyelitis were terminal invaders or air borne contaminants as they were found with about the same frequency under the same conditions in the control animals. The characteristics of these cocci are described in detail.

HURST discusses the histology of poliomyelitis. He states that the condition results in inflammatory lesions in all of the tissues of the nervous system, but involves the anterior horn cells most constantly.

The chief changes occurring in all of the tissues during the stage of advancing paralysis are: (1) perivascular infiltration of both large and small vessels (2) diffuse tissue infiltration and (3) nerve-cell destruction. The cellular reactions are described in detail especial emphasis being placed on the rôle played by the polymorphonuclear leucocytes and the microglia.

In Hurst's opinion the changes in the nerve cells are due to the direct action of the virus and not to the accompanying interstitial inflammation.

Meningitis is not necessarily a feature of the disease and often is not marked in the early stages.

the right side established on the seventeenth day, brought about marked improvement, but roentgen examination showed that numerous adhesions prevented the lung from collapsing completely. On the twenty sixth day phrenicectomy was performed on the right side but the result was insignificant. Fifteen days later pneumothorax was again tried but the effect was so unfavorable that the gas was at once withdrawn. It appeared that the collapse of the lung favored the progress of the gangrene. Next an attempt at antiseptic treatment by the pleural route was made but was followed by suppuration of the pleura. Thoracotomy with closed thorax, by Delbet's method performed with the object of providing drainage brought some relief.

Five months after the first examination a thoracoplasty was carried out in two stages. At the first operation the first five ribs were resected and a month later the remaining six were removed. Improvement was then rapid. Ten weeks after the operation the general condition was excellent and the cure complete except for a small pleural fistula. Fluoroscopic examination showed considerable elevation of the diaphragm on the right side and obscuration of the entire hemithorax which was greatly flattened.

GREGOIRE who presented Fruchaud's report to the Society stated that in the treatment of acute pulmonary gangrene two surgical methods are in use pneumotomy and pleuroparietal detachment. When the cavity is large when drainage by way of the bronchi is insufficient and when the presence of large masses of gangrenous tissue seems probable pneumotomy in spite of its dangers is the operation indicated. The chief danger is hemorrhage occurring a few days after operation. I do not inspect the cavity with the aid of a mirror attached to his forehead and compresses and sutures the vessels he finds. Pleuroparietal detachment must be done only when the gangrenous focus is small and when easy evacuation by way of the bronchi is assured. In the subacute and chronic forms the object of surgery is not the drainage of the cavity but completion of the process of retraction and sclerosis in the pulmonary lobe involved. Pneumotomy is not indicated as it would be impossible to open and drain all the small cavities present. Surgery can act against these multiple lesions only indirectly. Phrenicectomy is indicated only when the lower part of the lung is affected and the mobility of the diaphragmatic dome is practically intact. Pleuroparietal detachment is of value only when the lesion is limited. Partial thoracotomy (two or three ribs) has been done a few times. Fruchaud's case appears to be the first one of total thoracotomy. Bronchopneumoma of the opposite lung is particularly to be feared following this operation whether it is partial or total.

LORENCE A. CARPENTER

Sauerbruch Empyema (Brustfelleiterungen) 53 Tag
d. deutsch. Ges. f. Chir. Berlin 1929

Sauerbruch called attention to the fact that the treatment of empyema by incision of the thorax was

discussed in the writings of antiquity. This knowledge was subsequently lost but was regained by the surgeons of the middle ages. Drainage of the pus by puncture was again recommended in the middle of the last century and following the introduction of antiseptic drainage by incision was performed again. The wide opening of the diseased pleural cavity by the resection of several ribs is recommended by Franz Koenig came to be preferred to the permanent drainage recommended by Buelau. The next change was brought about by the influenza epidemics particularly the epidemic of 1918-1919 in which the mortality in cases of empyema treated by rib resection rose to 90 per cent. It was learned that the deaths were due not to the basic disease but to the sudden removal of the pus which did not allow time for the proper compensatory changes in the thorax. Adaptation of the vascular system was particularly difficult in empyema of the right side. The mediastinum was pushed over to the other side and mediastinal fluttering occurred. The venous cava was compressed and the heart was unable to respond properly to the sudden changes.

The importance of greater care in wide opening of the pleural cavity by rib resection was emphasized also by experience in suppurative pleurisy due to tuberculosis. While it was already known that suppurative tuberculous pleurisy should not be treated by wide opening of the pleura it was discovered that the closed method is advisable also in empyema associated with a mixed infection. More over the change from a purely anatomical viewpoint to a more functional viewpoint led to the conclusion that empyema is not to be regarded as an ordinary abscess which requires as rapid drainage as possible.

Sauerbruch next considered briefly the etiology of empyema discussing the primary form and the forms due to extension metastasis and infectious diseases.

He stated that neither the type of the bacteria nor the character of the exudate determines the prognosis although serous empyema is always dangerous. The clinical outlook depends first upon the type and severity of the basic disease. Toxic influences however may produce an independent clinical picture. A great deal depends upon the time at which the empyema developed. A parapneumonic empyema is more dangerous than a metapneumonic empyema. The former is particularly serious when it develops at the height of the illness as the result of the breaking through of a cortical focus. In general it may be said that the prognosis depends upon the type of the basic disease, the time at which the empyema developed, general factors influencing the patient and the disease, the maintenance of thoracic equilibrium and the patient's constitution and heredity.

It is necessary to differentiate between total empyema and partial empyema (apical basal, mediastinal and interlobar). When pus accumulates suddenly there is danger of perforation of a

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Trinca A J Fat Necrosis of the Female Breast
J College Surg Australasia 17 9 21

The author report five cases of mammary fat necrosis and believes that it is of more frequent occurrence than is indicated by the number of reported cases

From the cases cited it appears that fat necrosis is not necessarily an independent lesion in the breast and trauma is not an essential etiological factor The accidental discovery of the lesion in one case and its discovery after deliberate search in other cases of breast carcinoma suggest the possibility that hyperplasia of embryonic fat cells plays a part in the defense mechanism against the cancer cell The diagnosis of fat necrosis is indicated in cases in which there is a hard tumor in the breast with the clinical features of a scirrhous carcinoma of long standing but with a history of more or less rapid development

JACOB M MORA M D

TRACHEA LUNGS, AND PLEURA

Edwards A T The Surgical Technique of Pulmonary Abscess *Brit J Surg* 1929 xiii 102

Abscess of the lung is due to a localized infection resulting from (1) an attack of lobar pneumonia or bronchopneumonia (2) an infected embolus or (3) the inhalation of infected material

Effective surgical treatment requires careful localization of the abscess Roentgenograms should be taken in the anteroposterior lateral and oblique positions In some cases stereoscopic views may be of great aid

Abscesses following pneumonia or the lodgment of an embolus are generally similar in their roentgenographic appearance In the early stages and before leakage into a bronchus has occurred the abscess appears as a somewhat diffuse circular or oval homogeneous shadow in the clear lung area Following rupture of the abscess into a bronchus a definite fluid level is often seen This type may be termed the simple chronic abscess Following the inhalation of infected material the area of shadow is commonly more extensive and diffuse Leakage into the bronchus occurs early but the demonstration of a fluid level is unusual This variety is termed the bronchiectatic abscess, and arises primarily in the bronchioles The roentgen diagnosis is aided by the introduction of lipiodol into the bronchial tree

In a certain percentage of cases the condition will clear up entirely without operative treatment All infective foci in the upper air passages should be eliminated Natural drainage should be favored by posture The constant presence of sputum in

the pus warrants the administration of an arsenical preparation If there is no improvement in spite of these measures surgical drainage should be instituted

Before operation every aid should be utilized to improve the patient's condition and on the day of operation efforts should be made to obtain evacuation of the abscess by postural drainage Local infiltration anesthesia is the anesthesia of choice It should be preceded by the administration of morphine atropin and hyocine When general anesthesia is induced some form of positive pressure should be used

Abscesses arising in the upper lobes are best approached through an upper axillary incision those of the middle right lobe through an anterior incision and those of the lower lobes through a posterior incision In the author's technique a rib overlying the abscess is resected subperiosteally through a superficial vertical incision If the pleura is adherent an aspirating needle is inserted into the abscess and the tract enlarged with a dull red cautery A soft walled tube is then inserted and the wound closed loosely

If there are no adhesions between the pleural layers an iodoform gauze pack is inserted between the indurated area of the lung and the superficial structures or the two layers are stitched together the sutures being passed through the firm outside tissues and opening and drainage of the abscess is delayed for from six to eight days

Drainage is maintained until the quantity of sputum is negligible and the cavity has been obliterated except for the drainage tract If secondary bronchiectasis occurs methods ranging from phrenic division to complete thoracoplasty must be instituted

GEORGE A COLLETT M D

Fruchaud H Pulmonary Gangrene Treated Successively by Pneumothorax Phrenicectomy Oleothorax and Thoracoplasty Cure (Gangrene pulmonaire traitée successivement par pneumothorax phrénicectomie et oleothorax thoracoplastie) *Bull et mém Soc nat de chir* 1929 li 654

A man twenty five years of age who had coughed for two years but was otherwise well was seized suddenly with dyspnoea accompanied by grave general symptoms Shortly afterward his temperature rose to 39 degree C and he expectorated a large quantity of fetid pus containing anaerobic organisms of the Veillon type Auscultation revealed condensation at the base of the right lung and roentgen examination showed a gray shadow more dense posteriorly occupying the lower half of that lung

Serotherapy Mince's vaccines and tincture of alium were used without result Pneumothorax on

according to the Iselin von Jahn method. After removal of the pus the expansion of the lung is stimulated. The favorable effect of the increased pressure was shown by a comparison of two sets of statistics. Of sixty three patients with influenza empyema who were operated upon under increased pressure, fifty seven were cured without a fistula and only six (9.5 per cent) died, whereas of thirty two patients operated upon for the same condition without the use of increased pressure, seventeen (53 per cent) died. If a small cavity remains closed drainage may be helpful. A hydraulic system results as the lung re expands. In some cases other aids may be used to assist the expansion of the lung.

Interlobar and mediastinal empyemata represent special types. They often suggest pulmonary abscess. Operation must be done early and the pus drained through a wide opening. If the empyema is peripheral the operation is performed easily. If it is not peripheral the lung must be penetrated with the cautery until the focus of pus is reached. When there are contra indications to this procedure, prepleural plugging may be considered. Empyemata at the hilus may be operated upon in one or two stages under increased pressure.

In spite of the measures described cavities remain in from 18 to 20 per cent of cases of empyema. Often faulty after care is responsible. Sometimes continued suppuration is caused by a drain or gauze left behind. The plastic operation recommended for such cases by Schede is a major procedure with a mortality of from 25 to 30 per cent. Therefore another attempt should always be made with the Perthes Hartert method. If this is unsuccessful, a paravertebral extrapleural rib resection such as gives good results in pulmonary tuberculosis may be done and followed after two or three weeks by an intrapleural operation in which a flap is opened in the pleura and the adhesions are severed. Following this treatment the lung expands quite well. Phrenicotomy is of assistance. Scoliosis and deformities such as occur after the Schede operation are prevented. To avoid the large plastic operation obliteration of the pleural cavity with plugs has been recommended. In Sauerbruch's opinion it is better to use living plastic material for this purpose. The decortication method of Delorme has also been recommended but is not favored in Germany. Sauerbruch objects to it because of the associated danger of embolism, hemorrhage and exacerbation of old processes.

Sauerbruch discussed also empyema developing after artificial pneumothorax. He stated that in every case there is danger that the harmless exudate may be suddenly changed by influenza or angina into a severe mixed infection empyema. The extra pleural procedure has proved of value in the latter condition also reducing the mortality from between 90 and 100 per cent to 20 per cent. Even permanent cures have been ascribed to it.

In conclusion, Sauerbruch presented a large number of patients who had been treated by the various

procedures described and showed the roentgenograms made in their examination.

In the discussion of this report, SCHOENBAUER (Vienna) described an apparatus for closed drainage recommended by Demel. It consists of two bent trocars with lateral openings which form a circuit in the pleural cavity and are connected by a tube to a flask for aspiration of the pus. In sixteen cases treated in the past year and a half this apparatus was found of great value.

TOENNIS (Wuerzburg) reported on sixty one cases of empyema in infants and children ranging from one to six years of age. In this series there were only three deaths, a mortality of 5 per cent. In general, Toennis favors aspiration. In only a few cases has he supplemented it with irrigation. Two of the deaths in the cases reported were those of children two years of age and one was that of a child four years of age.

HELLER (Leipzig) discussed the closed method of treating acute empyema. For the past four years he has opened the pleural cavity by rib resection in the usual way and after removing the pus has closed it again and then inserted a drainage tube the size of a lead pencil through another incision according to the method of Iselin. The drainage tube was connected with a flask containing rivanol. No attempt at aspiration was made. As a rule the flask was placed at the level of the drainage opening, but sometimes it was raised or lowered. In this way complete drainage of the pus was achieved and later with the use of differential pressure under manometric control, good expansion of the lung was obtained. In two cases a secondary pneumothorax developed. In fifty nine, the lung became so expanded that there was absence of air between it and the chest wall. The procedure was used in eighty one cases with a mortality of 24 per cent. The average duration of the treatment was two months. In four cases a moderate thoracoplasty was found necessary.

MAKAI (Budapest) discussed autopythorax in empyema. He recommended the subcutaneous injection of the patient's own pus in quantities of from $\frac{1}{2}$ to 2 cc. from three to five times daily for from three to ten days. The method is effective and not dangerous. On rare occasions an abscess develops at the site of the injection but this is readily cured by aspiration or incision. In cases with marked exudate formation and manifestations of pressure the exudate must be evacuated by puncture. When there is no tendency toward absorption, continuous evacuation by closed aspiration is necessary. These mechanical measures must not be used too early or too late.

HOSENMANN (Freiburg) discussed the question of mixed infection in tuberculous total empyema and the results of the combined primary paravertebral and parasternal rib resection. He regards the procedures recommended heretofore for total empyema with mixed infection as too radical. In the large plastic operation it is difficult to close the cavity

bronchus with consequent asphyxiation. The site of perforation may close again or a pyopneumothorax may develop. In some cases the pus in the pleural cavity may break through into the pericardium or the peritoneal cavity. Burrowing abscesses may penetrate into the psoas muscle. Subphrenic abscesses may also be formed. The pus may perforate the chest wall with the formation of an empyema necessitatis. When the pus is on the left side and encapsulated a pulsating empyema may be produced by the transmission of the pulsation of the aorta.

The clinical picture is very varied, depending upon the degree of toxæmia. The signs include a high fever, chills, nervous manifestations, tachycardia, an anxious facial expression and cyanosis. The more quickly the exudate accumulates the more severe the symptoms. In the presence of pulmonary gangrene the manifestations of the empyema are in the background. The exudate may exert a favorable effect by its pressure on the focus unless it is itself due to the perforation of a gangrenous focus. The symptoms may be as stormy as those of a perforation peritonitis. Empyema developing in infancy or early childhood is particularly serious on account of the mobility of the mediastinum in the young and the numerous foci of bronchopneumonia. In such cases especially, conservative treatment is indicated. After aspiration care must be taken to assure efficient respiration as otherwise chronic empyema results which frequently is not diagnosed. As a rule this condition is associated with a subfebrile temperature. Sauerbruch has repeatedly discovered such undiagnosed chronic empyemata in patients under treatment in sanatoria for pulmonary disease.

In general the diagnosis of empyema is easy and can be confirmed by the roentgenogram. In interlobar empyema roentgen examination is especially necessary as only by this means can the diagnosis be established with certainty. Interlobar empyema is easily confused with tumors and mediastinal empyema with cysts especially cysts having purulent contents. The treatment of such cysts should be multiple extirpation.

Particularly dangerous in cases of empyema is the disturbance of intrathoracic equilibrium. In general the equilibrium is maintained by pulmonary inspiration and the expansion of the chest wall. The effect of pulmonary inspiration is often erroneously designated as the negative pressure of the thoracic cavity. A negative pressure (up to 8 mm.) is present only in the mediastinal cavity. The thoracic cavity constitutes a single structure. Variations in pressure on one side become apparent also on the other side. If the volume of the lungs becomes smaller the inspiration must increase. The body maintains equilibrium as long as it is able to do so. Two factors with an unfavorable effect are the inability to re-establish thoracic equilibrium and pneumonic consolidation of the lung causing a diminution in pulmonary inspiration. The determining factor is not the size of the exudate but the sum of the phenomena

occurring in the lung and thoracic cavity, including the diaphragm. The compensatory power of the sound side cannot be developed when the mediastinum is pulled over with kinking of the vessels and injury of the heart. The great importance of the mediastinum and the function of the chest and diaphragm is therefore manifest. The regulation of the thoracic equilibrium or intrathoracic pressure relationships is comparable to that of the intracranial pressure.

The treatment of empyema has three objects: (1) the removal of the pus, (2) the correction of the pathological thoracic pressure and (3) expansion of the lung. The physician must decide whether drainage of the pus or correction of the pathological pressure is the more important. In a case of severe posttraumatic pleural empyema cited by Sauerbruch wide drainage was the more important, whereas in a case of metapneumonic empyema without toxæmia the relief of the intrathoracic pressure by puncture for removal of the pus was indicated as the primary procedure. Often the removal of even a small quantity of pus results in rapid improvement in the circulatory conditions and resorption.

In the presence of a severe general infection with a simultaneous physical effect of the collection of pus the decision as to treatment is more difficult. In such cases the physician must study the various symptoms carefully and estimate the patient's strength. Occasionally, rapid emptying of the pus is the chief indication. In some cases aspiration and the administration of morphine will be the proper procedure whereas in others prompt rib resection is necessary. Frequently it is possible to cure even a purulent exudate with one aspiration in other cases multiple aspirations are necessary.

When persistent fever indicates the continued formation of pus the question arises as to whether it is best to use the open or closed method of drainage. Sauerbruch prefers closed drainage although rib resection is often necessary afterward. He reviews briefly the Buelau Perthes and Perthes Hartert procedures. He uses the method of Iselin in which exact regulation is possible by raising or lowering the flask. He warns against forcible expansion of the lung stating that the lung should expand of itself. Perthes also has warned against too strong suction. If the drainage treatment is not successful resection is necessary.

Sauerbruch described the technique of the latter procedure. He stated that it is not always advisable to perform the operation at the lowest point. In general he resects the seventh to ninth ribs in the posterior axillary line. The operation is facilitated by the use of increased pressure. The increase need be only slight usually from 3 to 5 mm. Hg is sufficient, but sometimes from 7 to 10 mm. is necessary. The increased pressure facilitates the exploration of the pleural cavity and the removal of coarse masses of fibrin. After the operation an air tight valve like bandage is applied and a drain is inserted.

tube, it will not cut the throat and the tube will not be bitten through.

When a benign stricture cannot be dilated the patient must choose between going through life with a gastrostomy and undergoing a serious operation. For strictures situated high up an antethoracic oesophagus may be made or a transthoracic operation may be performed. The latter is much the more dangerous and therefore is to be rejected. There is at Leyden a man with an antethoracic oesophagus which was made by Lexer's method eleven years ago. The patient swallowed hydrochloric acid and developed a stricture a few centimeters above the diaphragm. As the stricture could not be dilated a short loop of small intestine was isolated and still connected with its mesenteric vessels was sutured to the stomach and the skin, a gastrostomy being done by Tavel's method. A skin tube was then constructed and an opening for the oesophagus made in the neck. The two tubes were connected by small plastic procedures perhaps the most difficult part of the treatment. The patient is now a servant in a hospital and is able to eat the same food as normal persons. Solid food enters the stomach in a few minutes.

In the treatment of bronchiectasis the author does a primary phrenic nerve avulsion, usually on one side and involving the lower lobe. If this does not effect a cure he performs a thoracoplasty with removal of the periosteum and intercostal muscles. The next stage may consist in extirpation of the lobe or its slow destruction by burning. Sauerbruch has now abandoned his method of ligating the artery to remove the lobe. Graham's method of burning the lobe out is associated with rather serious risk of air

embolism and hæmorrhage. Resection of the lobe in the usual way carries with it great danger from shock and the chance of a permanent bronchial fistula. After a fatality from shock and hæmorrhage following lobectomy the author devised a procedure intermediate between thoracoplasty and lobectomy viz intrapleural plugging of the pleura after liberation of the lobe as far as possible back to its root. This measure may give a complete and lasting cure by causing compression of the diseased lobe. It is associated with minimal danger and is free from the disagreeable complication of bronchial fistula. Roentgenograms made after the procedure show that the upper lobe is not collapsed and continues to function quite well.

If this treatment fails to effect a cure because the lobe is too indurated to be compressed the last stage—which until recently had a mortality of 50 per cent—is no longer very serious. If the plugs are well placed around the root of the lobe and the lobe will not collapse the surgeon will find on removing the plugs that the lobe forms a more or less pedicled structure in the closed pleural cavity around it. It can be removed without shock by slow elastic stricture of the root. This can be done in the ward without causing pain. The elastic tube is tightened every day. The choked lobe undergoes necrosis and falls off or can be removed by section of necrotic threads in about a fortnight. Only very small bronchial fistulae appear. The after treatment consists in loose plugging of the cavity with gauze. The cavity becomes progressively smaller and at last the wound is closed possibly without a bronchial fistula.

JOHN J. MALONEY M.D.

Even the Sauerbruch operation requires many secondary interventions. Hosemann suggested a combination of the Sauerbruch paravertebral rib resection with a parasternal procedure. In the six years in which he has used this treatment his results have been uniformly good. He has performed the operation seven times without a death. One patient died after six months from amyloid disease because the operation was performed too late.

STETTINER (Z)

ESOPHAGUS AND MEDIASTINUM

Salnt J H. Surgery of the Esophagus. *Arch Surg* 1929 xiv 53.

An outline of the development of surgery of the esophagus is given with a comprehensive survey of the literature on the subject up to the end of 1927.

The problems which have rendered surgical procedures in this sphere so difficult and still remain to be solved are discussed. They are based on the anatomical structure and relationship of the esophagus and the risk of fatal infection of the pleura and the cellular tissue of the neck and mediastinum.

The numerous operations devised and performed for the extirpation of esophageal carcinoma have resulted in an appalling mortality.

It is pointed out that esophageal carcinomata are highly malignant that they metastasize readily and that by the time they give rise to symptoms they have usually spread beyond the limits of surgical removal.

The various methods used for the plastic formation of a new esophagus in cases of benign cicatricial stricture believed to be impermeable are described. In the cases reported in the literature the mortality was 20 per cent. Several operations are necessary and require months for their completion. Moreover their completion is by no means assured. For these reasons plastic operations are undesirable procedures to be avoided by early and adequate dilatation followed by further dilatation at subsequent intervals.

It appears that plastic operations have been undertaken unjustifiably in many cases inability to pass the smallest sound being taken as the indication of impermeability. In nearly all such cases a swallowed silk thread will pass through the stricture and can be used as a guide for sounds.

Pharyngeal diverticula are considered to be true sacculi, and traction pouches true diverticula. The latter rarely require surgical treatment. The removal of pharyngeal sacculi by the two stage method is associated with a lower mortality than their removal by the one stage operation.

A method of suture which has given satisfactory results is described for the end to end anastomosis of a divided esophagus. The suitability of this method as a means of anastomosing the two cut ends of the esophagus after a portion of it has been resected is being investigated.

Zaaijer J H. Surgery of the Esophagus and Lungs. *Lancet* 1929 cccvi 909.

The author reviews briefly the mechanism of positive pressure anaesthesia and describes the apparatus used in his clinic at Leyden.

The apparatus consists of two cylinders, one containing oxygen and the other nitrous oxide with a pressure regulator and gasometer. From the cylinders the gases pass through a water bottle which can be heated by electricity and thence they pass either through an ether bottle or directly to the mask. The quantity of ether is regulated by a simple pressure screw which narrows the direct tube to a greater or less degree. From the mask a rubber tube passes to a water ventilator which is hermetically sealed and thence a wide flexible tube conveys the gases out of the room. There is no anesthetic vapor in the operating theater.

The author describes his work in surgery of the esophagus. In one case of carcinoma of the esophagus which he reports in detail he made a thoracic esophagostomy and a gastrostomy and connected them together with a bottle and bellows so that the patient could pump food into the stomach. In two cases he performed a transpleural thoracotomy under positive pressure anaesthesia.

Zaaijer believes that in cardio-spasm there is a parietic condition of the muscle. On the basis of his theory that cardio-spasm is only the late stage of many years of disordered function due to anatomical displacement he advocates feeding the patient for several weeks through a stomach tube and washing out the esophagus morning and evening with a weak solution of salicylic or boric acid to heal the inflammation and reduce the dilatation by placing the esophagus at rest. He treated a man of sixty-one years in this way for about six months. Five years later the patient was still free from all esophageal symptoms. The X ray which previously had shown a greatly dilated and slowly emptying gullet revealed scarcely any dilatation and food passed promptly into the stomach. The patient died of a different disease.

In a case of cardio-spasm due to gas in the stomach Zaaijer made a gastrostomy opening to allow the gas to escape by means of a valve arrangement. Complete relief of the symptoms resulted.

Organic structure of the esophagus can usually be dilated. In Anglo-Saxon countries the dilatation is done by Plummer's method in which the patient swallows a silk thread and when this has passed into the intestine so that a purchase can be obtained it is stretched taut and a perforated sound is pushed over it through the stricture. Zaaijer customarily treats cases of organic stricture by Van Hacker's method picking the swallowed thread out through a gastrostomy and drawing soft rubber tubes through by means of it. The thread must be left in for a month or more. Zaaijer says that a thread whether it is of silk or of cotton gives the patient a cutting sensation in the throat. If a thin rubber tube is used this sensation will be prevented but the patient will be apt to bite through the tube. If a thread is placed in the

of a longitudinal and a transverse incision which causes the wear and tear of years of tension on the scar line to fall on both recti muscles instead of on one. The strain of abdominal pressure is exerted on the scar in three different places practically as if three different incisions had been made. The incision lessens the incidence of postoperative hernia because after closure the effect is that of three short incisions. Only a few twigs of nerves need be severed and no muscle fibers are cut.

SAMUEL KATZ, M.D.

GASTRO INTESTINAL TRACT

Buechner F, Siebert P and Molloy P J. Experimentally Produced Acute Peptic Ulcers of the Ante Stomach of the Rat (Ueber experimentell erzeugte akute peptische Geschwüre des Ratten vorgastrums). *Beitr path Anat* 1928 LXVI 391

The acute ulcer of the stomach and duodenum develops with stratified sloughing and severe acute inflammation of the gastric or duodenal wall and not with the histological picture of hemorrhagic or anæmic infarction. As a rule acute erosion and acute ulcer have a common cause. Insofar as the authors consider the typical acute gastroduodenal ulcer as an inflammatory formation they confirm the well known findings of Konjetzny but in contrast to Konjetzny and Fuhr they consider the cause of the inflammation in the mucous membrane to be a severe injury of the previously living gastro intestinal wall produced by the gastric juice itself and consisting in a sloughing due to the immediate erosive action of the hydrochloric acid of the gastric juice.

To prove their theory they carried out experiments on rats. The animals were starved for twenty four hours and then injected with 0.05 mgm of histamin per 100 gm of body weight. A few of the rats received this injection only once a few received it twice a day and a few were injected simultaneously with 0.5 mgm of atropin. The animals were killed by a blow on the back of the neck and then immediately dissected.

In 33 per cent of the animals ulcers were found in the ante stomach but never in the glandular stomach. Of sixty five animals which were subjected only to starvation or were examined at the height of the digestion or received only 0.5 mgm of atropin, such lesions were found in 6 per cent.

In other experiments continued for from fourteen to seventeen days in which 0.05 mgm of histamin was given twice every second day and the animals were starved erosion, or ulcers were found in the ante stomach of 80 per cent of the animals. When the same amount of histamin was given once every second day and the animals were starved lesions were found in 60 per cent and when the animals were starved every second day and no histamin was given the lesions were found in 40 per cent.

The two areas of the ante stomach attacked most frequently were the region of the border of the ante stomach and the glandular stomach, and the dome

of the ante stomach. In the experiments of one day's duration only one or two ulcers were found, but in the experiments of longer duration the ulcers were more numerous sometimes as many as two dozen being formed. The ulcerating defects were sometimes 0.5 cm in diameter. Nearly always they were surrounded by a rolled up epithelial wall.

Microscopically the development of acute erosions could be seen very clearly. In the central portion the ulcer was at first a necrosis with leucocytic infiltration of this portion and the submucosa. The surrounding region showed severe oedema. All transition stages from these formations up to acute ulcers were present. The uppermost layer of the acute ulcers consisted of necrotic masses then followed a sometimes narrow and sometimes wide layer of densely packed neutrophile leucocytes, which were present here and there also in the necrotic region. Not rarely there was in addition to this wall of leucocytes a zone of fibrinoid eschar formation. In many instances abundant fungi and bacteria of all kinds were found on the surface of the ulcers. They were always limited to the zone of necrosis.

In the authors' opinion these experiments show that an artificially produced disturbance of the correlation between the gastric juice and gastric wall led to the development of acute peptic ulcers. With regard to the recent experiments on ulcer carried out by Westphal Murata Hayashi and Nakashima the conclusion is drawn that in experiments with pharmacological influences upon the vegetative nervous system the ulcers are similarly produced by an increase in the secretion. The same theory is advanced regarding experiments in which a surgical intervention on the vegetative nervous system was undertaken. Exclusion of the pylorus by the method of von Eiselsberg causes a disturbance of the correlation between the gastric juice and gastric wall and thereby favors ulcer formation. In a similar way the results of the experiments of Koennecke von der Huetten Heppach Bickel, Mann and Williamson, and Winkelbauer and Starlinger are explained.

KONJETZNY (Z)

Loehr W. The Importance of Anaerobic Bacilli in the Peritonitis Due to the Perforation of Gastric and Duodenal Ulcers (Ueber die Bedeutung der anaeroben Bacillen fuer die Perforationsperitonitis beim Ulcus ventriculi et duodeni). *Deutsche Zeitschr f Chir* 19 9 CCXIV 103

Nothing is to be found in the literature on the importance of anaerobes in perforation peritonitis and the rôle they play as infective agents. The ubiquity of the anaerobic bacilli producing gas oedema (as well as the toxin forming anaerobes the bacillus botulinus and tetanus bacillus) and especially their frequent presence in foods indicate that they are constantly gaining admittance to the stomach. Nevertheless no proved case of gas oedema or gas phlegmon of the stomach is on record. All of the reports on these conditions have been based on

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Gizicki A The Sliding Hernia Problem (Zur Frage der Gleitbrüche) *Arch Chir* 1928 vii 3

The author reviews the literature on sliding hernia and reports 5 cases which were discovered among 285 cases of hernia treated surgically. All 5 sliding herniae were right sided inguinal herniae in males. In 1 case only the bladder was found in the hernial sac. In 4 the sac contained the caecum and appendix. The condition was suspected before operation in only 1 instance. All 5 patients were cured by the operation.

From the statistics of a large number of reports of herniotomies which are presented by the author in tabular form, it is seen that the sliding type of hernia is found in 3.5 per cent of such interventions. The author uses the term sliding hernia to designate all herniae of the female genitalia and all herniae of the abdominal wall and lumbar region which contain portions of the large intestine, the urinary bladder or a kidney.

A pre-operative diagnosis of sliding hernia is frequently impossible. The discovery during operation of masses of fatty tissue on the walls of the hernial sac and non-transparent, thickened walls of the supposed sac of the hernia should suggest the condition.

The operative mortality of sliding hernia is between 3 and 8 per cent. The greatest danger is an observed injury to the bladder or intestines. Therefore the isolation and opening up of such a hernial sac should be done with the greatest care.

N. Petrov (Z)

Wohlgemuth K and Joff A Artificially Induced Inguinal Herniae (Artifizielle Leistenbrüche) *Arch f Klin Chir* 1928 cli, 406

Artificially induced inguinal hernia is not common in Germany. In Russia, under the former régime, men with hernia were freed from military service. Russian soldiers therefore frequently induced hernia. The first induced herniae were recorded in 1888 and were found in Polish recruits. Later experiments were performed on cadavers to determine how such herniae were caused but more information was obtained from the patients themselves. The operators were usually persons who had previously served as male nurses. The operation was done with a finger or instrument which was introduced into the inguinal canal and then rotated. The pain caused by this procedure was so severe that frequently the patient became unconscious. After the operation the patient was urged to get up and jump, cough or strain.

The authors have operated on twenty-four patients with artificial herniae. Most of the herniae

were of the direct type. In some cases there was a scrotal hernia. As a rule all of the tissues in the vicinity of the hernia were markedly scarred. The external inguinal ring was usually destroyed. The hernial sac had a very characteristic conical form. The various structures of the spermatic cord were separated. The vas deferens was frequently completely isolated from the surrounding vessels.

Because of the adhesions operation for the repair of an artificially induced hernia is much more difficult than the usual operation and at times must be carried out in an atypical manner. Decker (Z)

Mason J T A New Abdominal Incision *Arch Surg*, 1929 xix, 129

The new abdominal incision is described as follows:

Step 1 The incision is begun just to the left and below the ensiform cartilage and carried downward through the skin and fat to the median of the fascia covering the left rectus muscle. It is extended downward along the rectus muscle to within 2 or 3 cm of the umbilicus and then carried straight across the midline to the right rectus muscle and downward along that muscle for a distance of from 4 to 6 cm.

Step 2 The anterior surface of the left rectus muscle is cleared of fat. The fascia is also cleared well in the transverse and right rectus incisions.

Step 3 The fascia on the inner third of the left rectus muscle is split the length of the incision. A transverse incision is then made from one rectus muscle to the other and the fascia on the inner third of the right rectus muscle is opened.

Step 4 The muscles are rolled outward and the peritoneum is opened behind the left rectus muscle. A transverse incision through the peritoneum just above the umbilicus completes the incision. This gives ample exposure for any operation in the upper part of the abdomen and allows the operator to reach and remove a retrocecal appendix in the lower right quadrant.

In the closure of the incision the patient is placed in a flexed position. The transverse incision is closed before the peritoneum is sutured. The suture is done after the manner of the Mayo repair of umbilical hernia. The upper and lower flaps being imbricated securely with two or three mattress sutures. The approximation of this part of the wound is facilitated by the flexed position advocated by Parr. The peritoneum of the upper part of the wound is then closed separately. The muscles are allowed to drop back in their sheaths and the aponeuroses are sutured in the usual manner.

This incision gives greater exposure than any other. It can be closed easily. It is a combination

nourinary symptoms. On the third day a fluoroscopic examination was made (a procedure which Mocquot who reported the case for Le Balle condemns as being associated with too great risk in the presence of intestinal obstruction). It showed stoppage of evacuation from the transverse colon and proved that the descending colon was interposed between the tumor and the anterior abdominal wall. The diagnosis of retroperitoneal cyst was confirmed.

At laparotomy the cyst was found to be the size of an adult head. It was punctured and 3 liters of apparently infected dark yellow fluid with a foul odor were evacuated. The orifice of the neck of the cyst was brought up to the laparotomy opening and fistulization established. Extirpation of the cyst left being delayed until later on account of the patient's general condition and the distention of the veins on the surface of the cyst.

The cyst fluid contained a small amount of albumin, urea, chlorides and several kinds of bacteria. There was probably accidental contamination. The patient was at this time in the third month of pregnancy but the pregnancy was not discovered until about a month later. Her condition improved and about nine weeks after the first operation the cyst was removed. It measured 34 cm. in length. Externally, no vascular pedicle was seen, simply a few adhesions. The patient then in the fifth month of pregnancy stood the operation well. The pregnancy was uninterrupted and a normal child was delivered at term.

The question of the origin of the cyst remains uncertain. From the microscopic examination of the cyst walls Le Balle concluded that it was of wolffian origin but Mocquot points out that a tissue analogous to renal tissue was found in the wall. The kidney did not come into view at any time during the operation.

FLORENCE A. CARPENTER

Nordentoft J. Roentgen Examination and Conservative Non-Surgical Disinvagination of Acute Intussusception in Infants under Roentgen Ray Control (sur l'examen radiologique et la désinvagination conservatrice non-chirurgicale de l'intussusception aigue des enfants sous le contrôle des rayons Roentgen). *Acta chirurg. Scand.*, 1929 ltv 319.

In four of five cases of acute intussusception in infants roentgen examination revealed a very characteristic picture of the condition similar to that found in chronic invagination in adults viz arrest of the barium enema limited by a regular concave line with the formation of a clear convex zone curving around the invagination and a thin streak through its lumen.

In three of the cases non-operative reduction of the intussusception under the control of the roentgen rays was possible. Following the reduction all of the colon, the appendix and the loop of small intestine became filled with the barium.

In two cases operation was necessary. One of the infants in which a simple ileal intussusception pro-

gressed to an ileocolic intussusception, died. The other which had a colocolic intussusception, was cured.

Arntzen L. and Helsted A. Disinvagination under Fluoroscopic Control of Acute Intestinal Invagination Occurring in Childhood (Désinvagination unter Roentgendurchleuchtung bei akuter Darminvagination im Kindesalter). *Acta chirurg. Scand.* 1919 ltv 69.

The author recommends that when acute intussusception is suspected in a child an opaque enema be given and if an intussusception is found in the colon an attempt be made to reduce it under fluoroscopic control.

The article contains roentgenograms made of two patients seven months and twelve years old respectively which show the findings before, during, and after disinvagination.

Gabriel W. B. A Case of Carcinoma of the Rectum Complicated by Enlarged Prostate. *Proc Roy Soc Med Lond.* 1919 xxi 1319.

The author reports the case of a man sixty-eight years of age who had had a rectal cancer for two years. The growth had been considered inoperable because of co-existing prostatic enlargement and an attack of urinary retention. Examination revealed a fungating rectal tumor above the level of the prostate. The tumor felt movable. The prostate was greatly enlarged and on bimanual examination could be felt above the pubes. Laparotomy revealed the growth at the rectosigmoidal juncture, freely movable and operable. No glands were palpable and there were no metastases in the liver. A left inguinal colostomy was performed.

After the operation acute retention of urine necessitated catheterization for two days. Therefore a suprapubic prostatectomy was done two weeks later under spinal anesthesia. After a stormy convalescence a perineal excision of the rectum was done one month later. Good recovery resulted.

Sections showed the growth in the bowel to be an adenocarcinoma and the prostatic condition to be a simple benign hypertrophy. JOHN W. VOTAW, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Ramsey, T. L. Primary Hypernephroma of the Liver. *Ann Surg.* 1929 xc 41.

Hypernephroma is essentially a tumor derived from cells with the same embryological origin as the cells of the adrenal cortex. The development of the anlagen of the adrenal in close embryological relationship to those of the kidneys, the ovaries, the testicles and epididymis, the uterus, the liver and their contiguous structures and vessels readily explains the frequent finding of adrenal cell rests in these tissues. According to Cohnheim's hypothesis, the development of tumors both benign and malignant could easily occur from such inclusions.

autopsy findings. No case of gas phlegmon of the stomach has yet been diagnosed during life.

From his studies Loehr concludes that on account of the abundant blood supply of the gastro intestinal tract the development of a gas phlegmon in this part of the body is impossible and cannot be produced experimentally. The results of the few investigations that have been made regarding the presence of anaerobes in the healthy subject in gastritis in gastric ulcer and in carcinoma of the stomach are questionable as the technique used in the bacterial work was not free from objection. It is characteristic of all anaerobes to form among themselves and with aerobes very tenaciously adhering symbioses which may basically change the character of the partner in the combination and stubbornly resist separation. Moreover, a faulty bacteriological technique favors the formation of such symbioses. This accounts for the numerous reports of new varieties of bacilli.

In his own studies Loehr used the method of Zeissler which is the only one guaranteeing exact results in the examination and culture of anaerobic bacteria. In Zeissler's institute fourteen stomachs affected by such conditions as gastric ulcer gastritis peptic ulcer of the jejunum, and carcinoma were studied with totally negative results as regards anaerobic bacilli. In only one case was an anaerobe discovered the bacillus multifermenticus. From these findings it is evident that the stomach does not offer the possibility of growth to the spores of any of the anaerobes gaining entrance to it. In culture media containing acid in an amount corresponding to the hydrochloric or lactic acid content of the stomach affected with ulcer or carcinoma and inoculated with the spores of all known anaerobes (from Zeissler's collection) there was not the slightest growth even under the most exact anaerobic conditions. In the stomach the growth of the anaerobes is inhibited by the absence of anaerobic conditions. The anaerobes can only vegetate in the stomach in spore form and do not produce toxins (tetanus and botulinus). In fact gastric tetanus is not known and even the feeding of botulinus spores from selected toxin producing strains was found harmless to experimental animals. Therefore in the peritonitis due to the perforation of a gastric or duodenal ulcer all that occurs is infection of the free peritoneal cavity with spores deprived of their capacity for toxin production. In exceedingly extensive animal experimentation Loehr demonstrated that large numbers of the spores of all types of anaerobic bacilli—only selected toxic strains from Zeissler's stocks were used—were unable to bring about infection of the peritoneal cavity. The spores were phagocytized and destroyed. This process of phagocytosis could be demonstrated also histologically. Even large numbers of spores were destroyed to the last vestige. After a few months the abdominal cavity of the experimental animals showed even no traces of organization processes. Practical experience with cases of perforated gastric ulcer con-

firms these findings. There is no such condition as a gas phlegmon of the stomach or an anaerobic peritonitis following the perforation of a gastric or duodenal ulcer. Moreover there is no such condition as tetanus of the stomach or botulinus developing in the stomach or in association with perforation peritonitis. LOEHR (Z)

Urrutia L. Late Results in Perforated Gastro-duodenal Ulcers. *Ann Surg.*, 1929, 90, 73.

The author has operated upon thirty four cases of acute perforated gastroduodenal ulcers and his associates have operated upon eighteen. There were twelve gastric ulcers, thirty nine duodenal ulcers and one perforating jejunal ulcer. The operative mortality was 17.6 per cent.

Urrutia concludes that in acute duodenal or gastric perforations a simple suture covers the vital indication with minimal risk. It effects an absolute cure of the ulcer in about 50 per cent of the cases. If symptoms persist after suture of the ulcer a partial gastrectomy or gastro enterostomy should be performed later. Primary gastro enterostomy exposes the patient to the risk of a marginal or jejunal ulcer. Partial primary gastrectomy is indicated only in cases of subacute perforation. The radical method is not the proper operation for the cure of jejunal perforations. Simple closure of the perforation and later perhaps a partial or subtotal gastrectomy with jejunal resection is safer.

JOHN W. NIXON M.D.

Le Balle. A Voluminous Retroperitoneal Cyst Causing Intestinal Obstruction in the Course of Pregnancy. Operation in Two Stages. Cure of Birth of a Living Child at Term. (*Kyste rétro péritonéal volumineux avec obstruction intestinale au cours d'une gestation, opération en deux temps guérison enfant vivant à terme*) *Bull et mem Soc nat de chir.* 1929, 14, 775.

When Le Balle first saw the patient whose case is reported the cyst was causing severe pain and distention of the left upper quadrant of the abdomen. Slight symptoms had been present for from sixteen to eighteen months and a swelling had been noticed for six months. Constipation had set in with intermittent pains but without vomiting or emaciation and had been complete for three days. The temperature was 38.4 degrees C.

The exact limits of the tumor were difficult to establish because of the phenomena of intestinal obstruction. Dullness extended upward toward Traube's space. On the right it covered half the epigastric region and extended two finger breadths below the umbilicus. On the left it covered almost the whole flank and extended into the lumbar region below the limit of dullness was slightly convex its lowest portion resting on a line drawn between the umbilicus and the iliac spines. The large intestine (transverse and descending colons) appeared on percussion to cross the middle third of the tumor. The intestine was greatly distended. There were

but there is no relation between cancer in general and cholelithiasis. There is probably a relationship between diabetes and gall stones. Atheroma and gall stones are related. The association is most marked with respect to the solitary cholesterol stone. There is perhaps some relationship between chronic nephritis and gall stones, but there is no relationship between cholelithiasis and gastric or duodenal ulceration. No association exists between cholelithiasis and inguinal or femoral hernia in either sex, but in women there is a striking association between cholelithiasis and umbilical and ventral hernia conditions also associated with adiposity.

The author concludes that local disturbances of an inflammatory nature are responsible for the formation of the faceted stones, and general metabolic factors for the formation of the solitary cholesterol stone.

MANUEL E. LICHTENSTEIN, M.D.

Ohnell H., and Lindblom K. Air Filled Bile Ducts in a Case of Fistula Between the Duodenum and the Common Bile Duct. *Acta radiol.* 1929 x 221

The authors report a case of fistula between the duodenum and common bile duct in which on roentgen examination before operation the cystic duct and part of the gall bladder showed air rarefaction very distinctly. When the common duct was opened at operation gas escaped under strong pressure.

Časovnikov P. Four Hundred and Eighteen Surgically Treated Cases of Bile Tract Disease (418 operierte Fälle von Gallenwegeerkrankungen). *Nov. chir. Arch.* 1928 xvi 305

The 418 cases of biliary tract disease reviewed by the author are divided into 3 groups: (1) 16 cases of malignant growths; (2) 2 cases of echinococcus disease; and (3) 400 cases of inflammatory disease.

The 16 cases of malignant growths included 9 of carcinoma of the gall bladder and 2 of bile duct carcinoma in which an exploratory laparotomy was done, and 5 of carcinoma of the pancreas and papilla of Vater in which an anastomosis was made between the gall bladder and stomach or duodenum. In the last group there were 3 postoperative deaths. Ten of the patients with malignancy had gall stones.

In the cases of the second group there was gall bladder or common duct obstruction by echinococcus cysts. In the first case cholecystectomy, cholecdochotomy and drainage were done in the first stage of the operation and an echinococcus cyst of the liver was removed in the second stage. Death resulted from cardiac weakness. In the second case in which the common duct was obstructed by an echinococcus cyst the removal of an echinococcus cyst in the liver and choledochotomy were followed by recovery.

In the third group there were 40 cases of non-calculous cholecystitis and 360 cases of cholecystitis with gall stones and their complications. Most of the patients were between thirty and fifty years of age. Three hundred and thirty six were

women, the ratio of females to males being 5:25:1. According to the Aschoff-Fedorov classification, these cases may be divided into 3 groups:

Group 1. Acute cholecystitis, 7 cases (1.75 per cent), hydrops of the gall bladder, 12 cases (3 per cent).

Group 2. Chronic uncomplicated recurring cholecystitis, 154 cases (38.5 per cent).

Group 3. Chronic complicated recurring cholecystitis, 245 cases (56.2 per cent). Among these cases there were 16 of suppurative, 30 of ulcerous, and 11 of gangrenous cholecystitis, 13 of empyema, 18 of sclerosis of the gall bladder, 31 of perforation, 128 of obstruction of the bile ducts, 2 of obliteration of the ducts and 26 of complete calculous obstruction.

The symptoms included colics in 56.6 per cent of all cases and pains radiating to the back and the right shoulder in 83 per cent. In 67 per cent the temperature was elevated. A history of jaundice was given in 43.15 per cent. Itching of the skin occurred in 12.5 per cent. All of the patients complained of gastro-intestinal discomfort, 72.3 per cent of belching, 68 per cent of constipation, and 53.4 per cent of vomiting. In 37 cases (9 per cent) calculi had been passed in the stools. Liver enlargement was present in 52.25 per cent, and enlargement of the spleen in 2.25 per cent.

In typical cases the diagnosis is easy, but in atypical cases it may be very difficult.

Of the 400 patients with cholecystitis, 162 (40.5 per cent) were operated upon with absolute indications (severe cholecystitis, common duct obstruction, perforation, peritonitis, etc.). 155 (38.75 per cent) were operated upon with relative indications (chronic recurrent cholecystitis with long intervals, mild acute cholecystitis and cholecystitis plus cholangitis), and 83 (20.75 per cent) were operated upon with indications varying between absolute and relative.

In 137 cases (34.25 per cent) the operation was done during an acute attack and in 261 (65.75 per cent) during an interval between attacks. Anesthesia was induced with ether, ether and chloroform or (in the last one and a half years) 1/2 per cent novocain solution. During the past six years the author has employed an angle incision by which the rectus muscle is divided transversely. The operative procedure of choice is cholecystectomy. This was done in 216 cases with 5 deaths. In 121 cases cholecystectomy and choledochotomy were done with 16 deaths. Cholecystogastrostomy was performed in 1 case, cholecystectomy with choledochoduodenostomy in 5 cases with 2 deaths, hepaticoduodenostomy, in 1 case, hepatocholeangio-gastrostomy, in 1 case, cholecystectomy with gastroenterostomy, appendectomy and gastric resection in 49 cases, with 2 deaths and tamponade with drainage in 1 case with a fatal outcome. Retrograde cholecystectomy was done 207 times—from the fundus in 190 cases and as a subserous procedure in 204 cases.

Primary hypernephromata have been found in the broad ligament, the ovaries, the uterus, the pelvis, the retroperitoneal tissue, the pancreas, the spermatic cord, the falciiform ligament, the tongue, the ciliary body, and the liver.

The tumor in the case reported by the author was found at operation to arise from the under surface of the right lobe of the liver and to be well encapsulated. It was about 20 cm in diameter. On microscopic examination it was found to have a fair, definite connective tissue capsule and to show the histological picture typical of malignant hypernephroma.

WALTER BAILEY, M.D.

GASOVNIKOV P. Cholecystitis without Stones (Ueber Cholecystitis ohne Steine). *Leitsatz Chir.* 1918, 2211-16.

Of 348 cases of cholecystitis which were operated upon, absence of stones was found in only 40 (11.5 per cent). The author frequently noted a relation between cholecystitis and acute infections such as appendicitis but could discover no difference between the calculous and non calculous forms of cholecystitis. The ages of the patients ranged from twenty to seventy years. There was no relation between the type of the cholecystitis and the patient's age or the course and duration of the condition before the operation. In the total number of cases the ratio of males to females was 1.6 and in the cases without stones 1.4. The 40 cases without stones included 19 of chronic recurrent cholecystitis with slight changes in the gall bladder wall and slight adhesions to the adjacent structures, 14 cases of chronic recurrent cholecystitis with well marked changes in the gall bladder wall and adhesions, 4 cases of chronic recurrent cholecystitis with a sclerotic shrunken gall bladder, pancreatitis, obstruction of the deep bile tracts, jaundice and cholangitis, 1 case of empyema of the gall bladder with pancreatitis and icterus, and 2 cases of subacute infectious cholecystitis with pancreatitis, angiocholitis and slight icterus—2 in which the gall bladder was invaded by the bacillus typhosus during the course of typhoid fever and 2 in which it became infected by the bacillus coli during the course of typhus. Enlargement of the lymph glands along the bile ducts was noted in almost all of the 40 cases.

Histological examination of 33 gall bladders revealed nothing specific for the non-calculous cholecystitis. In the bacteriological examination of 20 cases the cultures were sterile in 13. In 7 they yielded bacillus coli in 3, staphylococci, in 2, streptococci, in 2, bacillus typhosus and in 2, streptococci and bacillus coli or staphylococci.

In cases with obstruction of the deeper bile ducts and complete retention of bile the author operates as early as possible. When the retention is incomplete and the jaundice does not subside he operates between the seventh and the fourteenth days. He favors the radical procedure. In 22 of the 40 cases reviewed cholecystectomy alone was done, in 4 cases, cholecystectomy and choledochotomy were

done with drainage, in 8 cases, cholecystectomy and appendectomy, in 2 cases, cholecystectomy and pyloroplasty, in 1 case, cholecystectomy and gastro-enterostomy, in 1 case, cholecystectomy and gastropexy, in 1 case, cholecystectomy, pylorotomy, gastro-enterostomy and appendectomy, and in 1 case, cholecystectomy and choledochogastrotomy. The author prefers the Kehr incision and subserous, retrograde removal. When the bile is sterile he usually establishes drainage for from twenty-four to forty-eight hours—in cases with duct obstruction and cholangitis by choledochotomy and drainage and closure of the abdominal wound with 2 tampons. The 1 death in the cases reviewed occurred on the third day after cholecystectomy and gastro-enterostomy from hemorrhage from the anastomosis due to hemophilia in spite of blood transfusion before and after the operation.

The end results were determined in 33 cases. Twenty-eight patients (87.5 per cent) made a complete recovery. Two complained of obscure pain. One of the latter had, in addition to cholecystitis, an echinococcal cyst of the liver, and the other a gastric ulcer. Neither of these conditions was diagnosed before or during the operation.

The author concludes from his material that non-calculous cholecystitis which constitutes about 0 per cent of all cases of cholecystitis does not differ essentially from the calculous form, and that there is no basis for classifying it in a separate nosological group. Except roentgenologically in certain cases the diagnosis cannot be made before operation.

Case histories are tabulated.

E. DAVIES, M.D. (L)

GROSS D. M. B. A Statistical Study of Cholelithiasis. *J. Path. & Bacteriol.* 1919, xxxix, 503.

The author presents a statistical study of cholelithiasis based on 802 cases found in a series of 9,537 autopsies performed at the Leeds General Infirmary.

His findings show that gall stones may occur before the thirtieth year although their incidence is low up to that age. After the age of thirty they become progressively more common.

Gall stones are twice as common in women as in men but the relative difference decreases as old age is approached. As they are not appreciably more common in married women than in single women the difference in the sex incidence is not wholly or even mainly ascribable to the influence of pregnancy.

Obese persons develop cholelithiasis more frequently than thin persons. There is a definite association between cholelithiasis and cholecystitis especially cholelithiasis with faceted and pigment calculi. There is no association between cholecystitis and the solitary cholesterol and mulberry stones. Gall stones in general are probably less common in cases of straberry gall bladder than in other gall bladder conditions, but mulberry calculi are more frequent in the former.

Gall stones may be associated with local malignant disease of the gall bladder itself or of the bile ducts.

but there is no relation between cancer in general and cholelithiasis. There is probably a relationship between diabetes and gall stones. Atheroma and gall stones are related. The association is most marked with respect to the solitary cholesterol stone. There is perhaps some relationship between chronic nephritis and gall stones but there is no relationship between cholelithiasis and gastric or duodenal ulceration. No association exists between cholelithiasis and inguinal or femoral hernia in either sex but in women there is a striking association between cholelithiasis and umbilical and ventral hernia, conditions also associated with adiposity.

The author concludes that local disturbances of an inflammatory nature are responsible for the formation of the faceted stones, and general metabolic factors for the formation of the solitary cholesterol stone.

MANUEL E. LEWIS, M.D.

Ohnell H. and Lindblom A. Air Filled Bile Ducts in a Case of Fistula Between the Duodenum and the Common Bile Duct. *Acta radiol.* 1919 2 121

The authors report a case of fistula between the duodenum and common bile duct in which, on roentgen examination before operation the cystic duct and part of the gall bladder showed air rarefaction very distinctly. When the common duct was opened at operation gas escaped under strong pressure.

Zasovnikov, P. Four Hundred and Eighteen Surgically Treated Cases of Bile Tract Disease (418 operierte Fälle von Gallenwegserkrankungen). *Vorchr. Arch.* 1918 xvi 365

The 418 cases of biliary tract disease reviewed by the author are divided into 3 groups: (1) 16 cases of malignant growths; (2) 2 cases of echinococcus disease; and (3) 400 cases of inflammatory disease.

The 16 cases of malignant growths included 6 of carcinoma of the gall bladder and 2 of bile duct carcinoma in which an exploratory laparotomy was done and 5 of carcinoma of the pancreas and papilla of Vater in which an anastomosis was made between the gall bladder and stomach or duodenum. In the last group there were 3 postoperative deaths. Ten of the patient with malignancy had gall stones.

In the cases of the second group there was gall bladder or common duct obstruction by echinococcus cysts. In the first case cholecystectomy, choledochotomy and drainage were done in the first stage of the operation and an echinococcus cyst of the liver was removed in the second stage. Death resulted from cardiac weakness. In the second case in which the common duct was obstructed by an echinococcus cyst the removal of an echinococcus cyst in the liver and choledochotomy were followed by recovery.

In the third group there were 40 cases of non-calculous cholecystitis and 360 cases of cholecystitis with gall stones and their complications. Most of the patients were between thirty and fifty years of age. Three hundred and thirty six were

women the ratio of females to males being 5 25 1. According to the Aschoff-Erdorff classification, these cases may be divided into 3 groups.

Group 1. Acute cholecystitis, 7 cases (1 75 per cent), hydrops of the gall bladder, 12 cases (3 per cent).

Group 2. Chronic uncomplicated recurring cholecystitis, 154 cases (38 5 per cent).

Group 3. Chronic complicated recurring cholecystitis, 225 cases (56 2 per cent). Among these cases there were 16 of suppurative, 30 of ulcerous, and 11 of gangrenous cholecystitis, 13 of empyema, 18 of sclerosis of the gall bladder, 31 of perforation, 128 of obstruction of the bile ducts, 2 of obliteration of the ducts and 26 of complete calculous obstruction.

The symptoms included colics in 56 6 per cent of all cases and pains radiating to the back and the right shoulder in 88 per cent. In 67 per cent the temperature was elevated. A history of jaundice was given in 43 15 per cent. Itching of the skin occurred in 12 5 per cent. All of the patients complained of gastro-intestinal discomfort, 72 3 per cent, of belching 68 per cent of constipation and 53 4 per cent of vomiting. In 37 cases (9 per cent) calculi had been passed in the stools. Liver enlargement was present in 52 25 per cent, and enlargement of the spleen in 2 25 per cent.

In typical cases the diagnosis is easy, but in atypical cases it may be very difficult.

Of the 400 patients with cholecystitis 162 (40 5 per cent) were operated upon with absolute indications (severe cholecystitis, common duct obstruction, perforation, peritonitis, etc.) 155 (38 75 per cent) were operated upon with relative indications (chronic recurrent cholecystitis with long intervals, mild acute cholecystitis and cholecystitis plus cholangitis) and 83 (20 75 per cent) were operated upon with indications varying between absolute and relative.

In 137 cases (34 2 per cent) the operation was done during an acute attack and in 261 (66 75 per cent) during an interval between attacks. Anesthesia was induced with ether, ether and chloroform or (in the last one and a half years) 1/2 per cent novocain solution. During the past six years the author has employed an angle incision by which the rectus muscle is divided transversely. The operative procedure of choice is cholecystectomy. This was done in 116 cases with 5 deaths. In 121 cases, cholecystectomy and choledochotomy were done with 16 deaths. Cholecystogastrostomy was performed in 1 case, cholecystectomy with choledochoduodenostomy in 5 cases with 2 deaths, hepaticoduodenostomy, in 1 case, hepatocholeangio gastrostomy in 1 case, cholecystectomy with gastroenterostomy, appendectomy and gastric resection in 49 cases with 2 deaths and tamponade with drainage in 1 case, with a fatal outcome. Retrograde cholecystectomy was done 207 times—from the fundus in 190 cases and as a subserous procedure in 204 cases.

Three hundred and seventy four of the patients were discharged as cured. Twenty six died. The deaths were ascribed to cholæmic bleeding in 3 cases, purulent cholangitis and multiple abscesses in 6 cases, peritonitis in 4 cases, pneumonia and pulmonary gangrene in 2 cases, cardiac insufficiency in 2 cases, and hæmophilia embolism of the pulmonary artery, hæmorrhagic pancreatic necrosis, and chloroform anaesthesia in 1 case each.

The results from one to nineteen years later could be determined in the cases of 273 patients. Nineteen had died of various infectious diseases 4 (15 per cent) had died from the original condition (complications of the cholecystitis) 225 (82.7 per cent) were well, 38 (14 per cent) had been benefited and 5 (2 per cent) had not been benefited. C. AUROV (Z)

Cattell R. B. End Results of Surgery of the Biliary Tract. *Ann Surg.*, 1929 LXXIX 930

Cattell's report is based on a follow up of 634 patients who were operated upon at the Lahey Clinic a year or more ago.

Acute inflammatory changes were present in 72 per cent of the gall bladder specimens and chronic inflammatory changes in 82.7 per cent. Stones were found in the biliary tract in 71.4 per cent of the cases. The pathologist reported to of the excised gall bladders as normal. Primary carcinoma of the ducts exclusive of the ampulla of Vater, was found in 0.5 per cent of the cases.

Cholecystectomy was performed for stones in 311 cases and cholecystostomy was done in 39 cases. Good results were obtained in 77.7 per cent. The operative mortality was 6.8 per cent but this had dropped to less than 1 per cent during the past two years. The mortality was higher in the cases in which an extra biliary operation was done in addition. Therefore extra biliary surgery with the exception of appendectomy, has been largely abandoned.

Sixty four per cent of the patients with chronic cholecystitis without stones were relieved of their symptoms by drainage or removal of the gall bladder. In the few instances in which the gall bladder appeared normal but adhesions were present the results were consistently poor. The results following surgery in cases without biliary stones were not as satisfactory as those following the removal of stones. Therefore patients operated upon for biliary conditions without stones are now more carefully watched after the operation especially with regard to their dietary management and the care of the gastro-intestinal tract. Non surgical drainage has not been instituted in cases of chronic cholecystitis.

Stones were found in the hepatic or common duct in 8.4 per cent of the total number of cases. In 62 per cent their removal was followed by good results. The operative mortality was 13.3 per cent. Five patients (8.1 per cent) died after they left the hospital from recurrent or overlooked stones in the common duct. Because of this high mortality following the removal of common duct stones the

author believes that all gall stones should be removed early.

Cholangitis without stones occurred in 6 cases. Exploration and drainage of the common duct was performed with an operative mortality of 16.6 per cent. In the patients who recovered the results were good.

The author believes that cholecystectomy is the operation of choice for acute and chronic cholecystitis with or without stones unless the patient is a very poor operative risk. After cholecystostomy the function of the gall bladder is definitely impaired and in a large percentage of cases the clinical results are not satisfactory. Only 28.3 per cent of 60 patients who were treated by cholecystostomy were relieved of their symptoms.

During the past year 30 per cent of the total number of patients operated upon for biliary disease had an exploration of the common duct. This was twice the number that had been previously subjected to choledochostomy. The incidence of common duct stones was increased 50 per cent by these additional explorations. The operative mortality has not been increased. Therefore the common duct is now explored in all cases with a history of jaundice in the presence of stones, dilatation or thickening of the ducts or pancreatitis.

During the past two years the operative mortality in this series has dropped from 5.7 per cent to less than 1 per cent. The improvement has been due to greater care in the pre-operative preparation of the patient and the selection of cases and to the use of controllable spinal anesthesia. Nearly one half of the deaths resulted from surgical shock. Two patients died from pneumonia and a from pulmonary embolism. Acute pancreatitis was found at autopsy in the cases of 2 patients subjected to choledochostomy who had shown no clinical evidence of such a disturbance. STANLEY H. MENTZER, M.D.

Madier J. Rebellious Pancreatic Fistula Anastomosis of the Fistula into the Jejunum. Cure (Fistule pancréatique rebelle anastomosée de la fistule dans le jejunum guérison). *Bull et mém. Soc. nat. de chir.* 1929 LV, 570

In the case reported a pancreatic fistula developed eight days after gastric resection for ulcer terminated by closure of the duodenum and gastric segment and gastrojejunal anastomosis by the Jéjuna method. As the fistula failed to close under medical treatment for seven months Madier decided to anastomose it into the duodenum. On removing the cicatrice and the underlying cicatricial block which was about the size of a mandarin orange and adherent to the liver mesocolon duodenal stump and head of the pancreas he found an irregular cavity the size of a walnut, at the bottom of which there was an opening. When a sound was introduced into the opening it penetrated from 8 to 10 cm. obliquely backward, to the left and upward. The region of the duodenum proving to be in no unsuitable condition for the operation Madier anastomosed the fistula into the

effluent branch of the previous gastrojejunal anastomosis, which was well provided with peritoneum. The postoperative course was not smooth. Six days after the operation the wound opened, with the escape of a fluid which digested the abdominal wall. Two months later, however, healing was complete. Today, three years after the operation, the patient is in good condition and may be considered cured.

LECÈNE, who read Madier's paper before the Society, reported the case of a woman sixty-three years old whom he treated for an abscess of the body of the pancreas the size of an orange. Drainage of the abscess was followed by the formation of a fistula from which there escaped a fluid having the properties of pancreatic juice. Four months after the operation on the abscess, Lecène dissected out the fistulous tract, inserted a No. 12 Nélaton catheter and implanted the fistula with the catheter into the greater curvature of the stomach. As in Madier's case, healing was not smooth but was ultimately complete.

FLORENCE A. CARPENTER

MISCELLANEOUS

KOK, F. "The Treatment of Intraperitoneal Haemorrhage. Clinical and Experimental Investigations." (*Zur Behandlung intraperitonealer Blutungen. Klinische Beobachtungen und experimentelle Untersuchungen.*) *Ztschr. f. Geburtsh. u. Gynäk.* 1928, xciv, 372.

In six of twenty-one cases of acute internal haemorrhage from tubal pregnancy, all of the blood fluid as well as clotted, was allowed to remain in the peritoneal cavity. The subsequent course was smooth and recovery was rapid. Kok says there are no objections to operating with the patient in the Trendelenburg position.

The author reviews the various theories formerly held regarding the treatment of intraperitoneal haemorrhage and states that even today there is no generally recognized opinion as to the most effective procedure. To determine whether in cases of free intraperitoneal haemorrhage it is best at operation, to leave the blood behind or remove it, he made experiments on rabbits. His experimental technique, his observations with regard to infection and toxic damage, the primary mortality, the changes in the circulating blood, the haemoglobin, the erythrocyte and leucocyte counts, the albumin content of the blood and the formation of adhesions are reported in detail. The findings may be summarized as follows:

No injurious effects were noted when autogenous blood was left in the peritoneal cavity; neither were peritoneal adhesions formed.

Of the greatest importance in the formation of adhesions are mechanical injuries to the peritoneum and the irritation produced by vigorous wiping with dry sponges. Blood obtained by venesection and left in the abdominal cavity was very rapidly absorbed without reaction (including the clots). Absorption of this blood was of great aid in the recovery of the animal rendered anemic. It materially hastened blood regeneration and sometimes prevented death from haemorrhage. It is not the greater quantity of fluid but the specific blood elements that are resorbed which exert this favorable action.

In conclusion, Kok says that in the treatment of exsanguinated patients with ruptured tubal pregnancy, quick haemostasis and the most rapid possible completion of the operation are of greatest importance. In such cases, under aseptic conditions, the blood may be left behind in the peritoneal cavity without hesitation. Haematocetes and encapsulated haemorrhages should be removed. DEULER (G)

GYNECOLOGY

UTERUS

Schreiner B F A Clinical Study of Eight Cases of Myoma Malignum *Surg Gynec & Obst*, 1929, XLVII 735

The statistics of the New York State Institute for the Study of Malignant Disease show that malignant myoma of the uterus constitutes six tenths of 1 per cent of all uterine tumors examined

Of the eight patients with malignant myoma whose cases are reported in this article one is clinically well after four years and nine months This patient received high voltage X ray treatment one month after operation The results in the seven other cases were poor In a few instances palliative results were obtained

Malignant myoma causes death by direct extension and metastasis

The author emphasizes that all fibroids should be examined microscopically and if a suggestion of malignancy is found the patient should be subjected to postoperative irradiation immediately

HARVEY B MATTHEWS MD

Meigs J V Adenocarcinoma of the Fundus of the Uterus A Report Concerning the Vaginal Metastases of This Tumor *England J Med*, 1929 CCI 133

Of 266 proved cases of adenocarcinoma of the fundus of the uterus which were investigated at the Huntington Memorial Hospital Boston, in the period from 1917 to 1928 metastatic cancer was found in the vagina in 12 per cent

The two outstanding signs of vaginal metastasis were vaginal discharge and bleeding Twenty one of the 25 patients were between the ages of fifty and seventy years Nineteen were married and 15 had borne children One or more nodules which bled on curetting were found in the vaginal wall Uterine smears showed typical adenocarcinoma identical with that found in the vaginal nodules

Vaginal metastasis has been attributed to direct extension venous extension and direct implantation The author believes it occurs by direct implantation

In the cases reviewed the treatment consisted in total hysterectomy with radium treatment of the vaginal metastasis or radium treatment of both the uterus and the vagina

Twenty three of the patients were followed up Eighteen lived an average of two years after the operation The 5 who were living and well were treated by operation and radium irradiation Two cases are reported in detail

I EDWARD BISHKOW MD

Strachan G I The Technique of Radium Application in Uterine Carcinoma *J Obst Gynaec Brit Emp* 1929 XXVI 367

In the application of radium in the treatment of carcinoma of the uterus it is necessary to determine (1) the manner in which the radium tubes should be introduced so that as many as possible or all of the tumor cells will be killed at the same time (2) the quantity of radium and the length of exposure necessary to kill the tumor cells without injuring the normal cells (3) the best method of inserting secondary growths and (4) the best type of screening material to be employed

In carcinoma of the cervix Herman uses radium to the interior of the uterus and the vagina simultaneously The uterus receives about 500 mms and the vagina about 1,500 mms The treatment is repeated after a week and again after two weeks a total of about 7,000 mms has been given Then for six months no further irradiation is applied unless a recurrence develops X ray treatment is given only in cases with extensive glandular metastases or recurrence in the parametrium

Ward gives a dose of from 2,400 to 4,200 mms The radium is stitched in place in the cervix and needles are inserted in the periphery of the growth if there is involvement of the vagina rectum or bladder In a few days the patient is up and at the end of a week she is sent home with instructions to douche daily with a solution of potassium permanganate and to report once a month for examination Subsequent applications of radium depend upon the results Ward stresses the importance of follow up work by the surgeon who treats the case

Clark and Norris usually push the bladder upward, amputate the carcinomatous mass with the cautery, and insert 50 mms of radium in the cervical canal and a similar dose in the stump The cautery wound is left to heal by granulation A second application of radium is made at the end of three weeks if amputation of the cervix has not been done and after from three to six weeks if the cervix has been amputated Clark and Norris also advocate cleansing douches and follow up work In inoperable cases they give a single dose of from 2,000 to 2,500 mms of radium in the cervix and rectal fistulae of a great risk of causing a bladder or rectal fistula

Donelson advises the radium in and around the tumor he four giving a dosage of 7,000 mms and the patient at intervals thereafter and was not removed any necrotic growth in 8 to 10 weeks when the ulcer becomes healed 1/2 copper when the ulcer becomes in an ulcer of tissue has been removed for examination a radium tube is inserted and two tubes are stitched in

the vagina. The vagina is then packed with gauze soaked in liquid paraffin and the labia are sutured by two stitches. In twenty four hours 2,272 mgm hrs are given. This may be continued for three days or, better repeated on the eleventh and thirtieth days.

Pinch, in the London Radium Institute, varies his treatment according to the type of growth. In cases of endocervical carcinoma a tube containing from 50 to 75 mgm is inserted in the cervical canal and from four to six tubes of 10 mgm each are placed in the thickened cervical wall and left in place for twenty four hours. If the parametrium is infiltrated a tube of 50 mgm is introduced for twenty four hours and general irradiation of the pelvic cavity is obtained by means of flat applicators containing from 150 to 290 mgm which are placed in each iliac fossa for from twenty four to thirty hours. The treatment is not repeated before six weeks have elapsed. In the ulcerative type a variable number of 10 mgm tubes are fixed in a dental wax cast of the ulcer and kept in position for twenty four hours. In fungating types the excessive growth is removed by excision, curetting, cauterization or diathermy.

In the Radium Institute of Paris uterine or vaginal applicators are left in place for from five to seven days 7,200 mgm hrs of irradiation being given. The applicators are removed and a cleansing douche is given daily. The X ray is used in the more extensive cases.

In the Cardiff Royal Infirmary the vagina is douched twice daily with lysol solution and the rectum well cleared. The cervix is then exposed and a 50 mgm tube of radium is placed well up in the cervical canal from four to six to 10 mgm tubes are placed in the periphery of the growth and a 50 mgm tube is introduced into the center of the growth if the canal is at one end. From 2,160 to 4,440 mgm hrs of irradiation is obtained. Subsequently daily lysol douches are given and the patient is told to report for examination at regular intervals. In cases of carcinoma of the body of the uterus two 50-mgm tubes and one 25 mgm tube are placed in the uterine cavity down to and including the cervix and kept in place for twenty four hours.

The evidence seems to indicate that better results are obtained from small doses of radium applied over a long period of time than from massive doses given in a short period.

ABRAHAM A. BRAUER M.D.

Rubens Duval II. The Treatment of Recurrences of Cancer of the Uterine Cervix. (A propos du traitement des récidives du cancer du col de l'utérus). *Bull Soc d'obst et gynec de Par* 1929 xviii 315.

Rubens Duval believes that in the development of the recurrence and the cure of cancer the rôle of the terrain has been insufficiently appreciated. Experiments have shown that different animals of the same species react differently to the same stimulus as regards the development of malignancy. Normal organisms are unsuitable soil for the development of

cancer cells probably because of humoral conditions and unknown regulating mechanisms but the development of cancer does not mean that the organism is entirely lacking in these humoral conditions and regulating mechanisms. The fact that the malignancy of a neoplasm differs from one subject to another shows that the inhibiting factors, while in sufficient are not wholly absent after a cancer has developed. It is reasonable to suppose that they may in some cases increase in potency and become able to dispose of cancer cells left after an incomplete operation.

Some years ago Larsen and Lysholm at Stockholm thought to improve their results from post operative irradiation of the breast (which were already good) by applying at one time the so called sterilizing dose. Fifty one per cent of the patients thus treated developed a recurrence within the next year. It is evident that the intensive irradiation destroyed an inhibitive power in the organism that in many cases, would otherwise have been able to delay or prevent the recurrence.

The gravity of the prognosis of recurrent cancer is seen in the fact that the organism has been unable to deal effectively with a few cancer cells remaining after a supposedly thorough removal. Unless the condition of the terrain can be altered it will probably not be able to deal any better with the cells that, through being in a state of repose and hence of slight radiosensitivity, remain undestroyed after irradiation. The improvement of the terrain is therefore a very important part of the treatment of the primary cancer and its recurrence. The general treatment instituted by Brocq and the author was directed toward this end. Although it did not prevent recurrence, it seems to have favored the subsequent action of radium in a case of recurrence of cancer of the cervix.

FLORENCE A. CARPENTER

Gagey J. Postoperative Recurrences of Cervical Cancer Treated with Radium. Late Results (Résultats post opératoires des cancers du col traités par le radium résultats éloignés). *Bull Soc d'obst et de gynec de Par*, 1929, xviii, 312.

In the period from 1919 to 1922 Gagey treated with radium forty two cases of cervical cancer recurring after operation. Thirty one of the patients were followed up. Ten died within the first year, thirteen in the second year, four in the third year and one in the fourth year. Three are entirely well eight years after the radium application. The histories of these three are briefly given. At the time of the operation their ages were sixty one, thirty two and forty three years. The recurrence developed six months, three weeks, and eight weeks, respectively after the operation.

In the first case the irradiation was given with 65 mgm of radium filtered by 0.5 mm of platinum and 1.0 mm of lead in a cork of about 5 mm, and the duration of the exposure was forty eight hours. In the second case three tubes of emanation filtered by 1.5 mm of platinum in cork stoppers were used

GYNECOLOGY

UTERUS

Schreiner, B. T. A Clinical Study of Eight Cases of Myoma Malignum *Surg Gynec & Obst*, 1929, xlviii 730

The statistics of the New York State Institute for the Study of Malignant Disease show that malignant myoma of the uterus constitutes six tenths of 1 per cent of all uterine tumors examined.

Of the eight patients with malignant myoma whose cases are reported in this article one is clinically well after four years and nine months. This patient received high voltage X-ray treatment one month after operation. The results in the seven other cases were poor. In a few instances palliative results were obtained.

Malignant myoma causes death by direct extension and metastasis.

The author emphasizes that all fibroids should be examined microscopically and if a suggestion of malignancy is found the patient should be subjected to postoperative irradiation immediately.

HARRY D. MATTHEWS M.D.

Meliss, J. V. Adenocarcinoma of the Fundus of the Uterus. A Report Concerning the Vaginal Metastases of This Tumor. *England J Med*, 1929 cci, 155

Of 206 proved cases of adenocarcinoma of the fundus of the uterus which were investigated at the Huntington Memorial Hospital, Boston, in the period from 1917 to 1928 metastatic cancer was found in the vagina in 1.1 per cent.

The two outstanding signs of vaginal metastasis were vaginal discharge and bleeding. Twenty-one of the 25 patients were between the ages of fifty and seventy years. Nineteen were married and 15 had borne children. One or more nodules which bled easily were found in the vaginal wall. Uterine curettage showed typical adenocarcinoma identical with that found in the uterine cavity. Sections of the vaginal tumors.

Vaginal metastasis has been attributed to lymphatic extension, venous extension and direct implantation. The author believes it occurs by direct implantation.

In the cases reviewed the treatment consisted in total hysterectomy with radium treatment of the vaginal metastasis or radium treatment of both the uterus and the vagina.

Twenty-three of the patients were followed up. Eighteen lived an average of two years after the operation. The 5 who were living and well were treated by operation and radium irradiation.

Two cases are reported in detail.

I. EDWARD BISHOP M.D.

Strachan, C. I. The Technique of Radium Application in Uterine Carcinoma. *J Obst & Gynec Brit Emp*, 1929 xxxvi 367

In the application of radium in the treatment of carcinoma of the uterus it is necessary to determine (1) the manner in which the radium tubes should be introduced so that as many as possible or all of the tumor cells will be killed at the same time, (2) the quantity of radium and the length of exposure necessary to kill the tumor cells without injuring the normal cells, (3) the best method of influencing secondary growths and (4) the best type of screening material to be employed.

In carcinoma of the cervix Heyman applies radium to the interior of the uterus and the vagina simultaneously. The uterus receives about 800 mgm hrs and the vagina about 1500 mgm hrs. The treatment is repeated after a week and again after two weeks a total of about 7000 mgm hrs being given. Then for six months no further irradiation is applied unless a recurrence develops. X-ray treatment is given only in cases with extensive glandular metastases or recurrence in the parametrium.

Ward gives a dose of from 2400 to 4400 mgm hrs. The radium is stitched in place in the cervix and needles are inserted in the periphery of the growth if there is involvement of the vagina, rectum or bladder. In a few days the patient is up and at the end of a week she is sent home with instructions to douche daily with a solution of potassium permanganate and to report once a month for examination. Subsequent applications of radium depend upon the reaction. Ward stresses the importance of follow up work by the surgeon who treats the case.

Clark and Norris usually push the bladder upward, amputate the carcinomatous mass with the cautery and insert 50 mgm of radium in the cervical canal and a similar dose in the stump. The cautery wound is left to heal by granulation. A second application of radium is made at the end of three weeks if amputation of the cervix has not been done and after from three to six weeks if the cervix has been amputated. Clark and Norris also advocate cleansing douches and follow up work. In inoperable cases they give a single dose of from 2000 to 2500 mgm hrs of radium irradiation if this can be done without risk of causing a bladder or rectal fistula.

Donk also harnesses the radium in and around the growth, giving a dosage of 7000 mgm hrs and examines the patient at intervals thereafter.

Forsdike continually removes any necrotic growth points the surface with 10 per cent copper sulphate and injects colloidal copper when the ulcer becomes callous. After a piece of tissue has been removed for microscopic examination a radium tube is inserted in the cervical canal and two tubes are stitched in

1 Irregularities of menstruation The cause may be early death of the ovum It is possible that in some cases the administration of hormone may strengthen and increase the length of life of the ovum

2 Amenorrhœa This is dependent upon hormone production The hormone content of the blood may show only slight variation from the normal or may be constantly below normal, or entirely lost The possible influence of hormone treatment is difficult to determine as spontaneous cure may occur or the condition may be favorably affected by a change in the patient's mode of living and other factors Nevertheless the results of experiments carried out by Zondek and Ascheim on animals suggest the possibility that under the influence of hormone the mucosa may be prepared for embedding of the ovum and the fertility of the ova may be increased

3 Abnormal persistence of the follicle without rupture, causing continued stimulation of the uterine mucosa In such cases hormone therapy is directly contra indicated and only abrasio mucosæ is to be considered

4 Insufficient menstruation In cases of uterine hypoplasia the degree of menstrual bleeding can be influenced favorably only by hormone treatment In vegetative insufficiency manifested by defective turgor and a puerile character of the pelvic cellular tissue and the uterus good results are dependent upon long continued treatment with large doses For cases with signs of climacteric insufficiency which have been favorably influenced heretofore by unstandardized preparations, the expensive standardized preparations are unnecessary With regard to dosage in amenorrhœa Schroeder advocates the scheme worked out by Laqueur Van Rooij and De Snoo FLESCH (G)

Corso G B Studies of the Pelvic Cellular Tissue and the Hypogastric Neurovascular System In Sclerocystic Ovaritis (Ricerche sul cellulare pelvico e sul sistema nervo-vascolare ipocipogastrico nella ovarite sclerocistica) *Clin ostet*, 1929 xxx, 285

Microscopic study of the pelvic tissue in sclerocystic ovaritis shows that the dominant anatomicopathological characteristic is a diffuse sclerosis of the connective tissue and that the histological appearance of the cysts depends upon the stage of evolution which the ovarian follicles have reached at the time the examination is made The sclerosis is not limited to the ovary it affects more or less all of the genital system Not only the cellular tissue of the pelvis but also the whole neurovascular system of the region is involved

The cause of the process may be an exogenous or endogenous irritation the latter chiefly from the

appendix and pelvic colon Because of the reticulo histiocytic structure of the pelvic connective tissue and the fact that it contains many lymphoid structures it is evident that at least at first the changes which take place are of the nature of a constitutional defense reaction against the external causes threatening the organs When the process has reached the stage of sclerosis the nerve trunks of the pelvis show a diffuse neurofibromatosis which is responsible for the intense pelvic neuralgia associated with the condition

These findings show that operation on the nerve trunks of the pelvis—resection of the sacral sympathetic, the hypogastric periauricular sympathetic, or the ovarian nerves—is justifiable These operations stop nerve conduction and therefore pain However, as the changes are not confined to the nervous system but affect the ovary primarily and most intensely and sometimes even the uterus it is often necessary to remove the ovary or uterus Oophorectomy is indicated particularly in the cases in which the ovary is so greatly changed that it causes signs of endocrine dysfunction

AUDREY G MORGAN M.D

MISCELLANEOUS

Geist S H The Morphology of Normal Menstrual Blood and Its Diagnostic Value *Surg Gynec & Obst* 1929 xlv 145

Geist describes the method of obtaining and preparing specimens of menstrual blood for study The constituents particularly studied by him were the vaginal and uterine epithelium and leucocytes, both mononuclear and polynuclear

The uterine epithelium was found in most marked profusion on the second day of the period Geist discovered also clumps of stroma cells which occurred entirely independent of the epithelium and in varying profusion The stroma extrusion was most marked on the second and third days Another striking finding was the presence of desquamated vaginal epithelium

The study of the white blood cells showed that the number of polynuclear leucocytes varied greatly The white blood cells were more numerous in the menstrual blood contained in the vagina than in the menstrual blood issuing from the cervix

Geist concludes that menstrual blood contains a number of elements which are so characteristic and stable as to make it possible to differentiate menstrual blood from blood of other types of genital bleeding This fact gives additional diagnostic aid in pelvic diseases accompanied by hemorrhage

ROLAND S CROAN M.D

and the duration of the exposure was seventy two hours. In the third case three coils containing tubes of emanation filtered by 1.5 mm. of platinum were employed.

Also reported are the cases of three patients treated with radium because operation was incomplete. These three women have remained well—two for nine years and one for eight years. Their ages at the time of operation were thirty five, forty six and forty five years.

Gagey believes that postoperative radium treatment is indicated definitely when the operation is incomplete or it is necessary to section neoplastic tissue.

FLORENCE A. CARPENTER.

ADNEXAL AND PERIUTERINE CONDITIONS

Koster, H. Torsion of the Normal Fallopian Tube. *Am J Surg*, 1929 111 67.

Most cases of torsion of the fallopian tube which have been reported were cases of torsion of a hydrosalpinx or an ovarian or tubal tumor.

The case reported by the author was that of a sixteen year-old girl who gave a history of sudden pain in the lower part of the abdomen which by the following day, became localized to the right lower quadrant. The temperature reached a maximum of 101 degrees F. There was no vomiting. Tenderness but no rigidity was present. Rectal examination revealed a tender mass in the right lower quadrant which seemed to be attached by a pedicle to the uterus. The leucocyte count was 12,200 with 86 per cent polymorphonuclears.

A diagnosis of ovarian cyst with a twisted pedicle was made. At operation the right tube was found to be twisted one and a half turns and to contain hemorrhagic fluid. The axis of the twist was anemic and distal to the point of torsion the tube was tense and bluish black. Salpingectomy was performed, the appendix was removed and the abdomen closed without drainage. Recovery was uneventful.

Torsion of a normal tube may be favored by the course of the tube, the length of the mesosalpinx, a fault artery or tortuous veins, but the direct causes are not known.

The symptoms are very similar to those of an ovarian cyst with a twisted pedicle: sudden sharp pain, vomiting and later a rise in the temperature. Physical examination reveals tenderness and rigidity. On pelvic examination, a mass can be palpated in the affected fornix.

The condition must be differentiated from ovarian cyst with a twisted pedicle, appendicitis, omento-volvulus, salpingitis, intestinal obstruction and pyelitis.

Unless operation is performed, rupture of the tube may occur with the production of hemoperitoneum with symptoms of secondary anemia, gangrene and peritonitis.

The treatment is excision of the tube down to the horn of the uterus. I. EDWARD BISHOP MD.

Schroeder R. The Clinical Use of Sex Hormone Preparations (Die klinischen Anwendungen ebster der Sexualhormonpräparate ihre klinischen Tests). *Deutsche med. Wochenschr.*, 1929 1 3.

In spite of all advances in our knowledge regarding the biological characteristics of the ovarian hormone the problem still remains to be solved as to how this knowledge may be applied to human beings. The question of dosage is complicated because when the different species of animals are compared it becomes evident that dosage cannot be based on body weight. In the rat the oestrus reaction is produced by about 4 mouse units which in the case of the human being would correspond to from 8,000 to 10,000 mouse units. In rabbits on the other hand, the oestrus reaction requires 21 mouse units and on this basis a woman weighing 60 kgm. would require 7,000 mouse units.

If instead of a vaginal smear the growth reaction of the uterus were used as a standard, a purely quantitative reaction might be worked out. Moreover the ability to influence the growth of the hypoplastic uterus and the intervals of the menstrual cycle might prove to be tests of value also in clinical cases.

In order to obtain practical clinical indications for the use of standardized hormone preparations it is necessary to begin with normal ovarian function. This is manifested by (1) hyperaemia of the genital organs, loosening of the tissues, growth of the uterus and vagina and the normal form and position of the uterus dependent upon the turgescence of the tissues, (2) the characteristic development of the secondary sex characteristics (these two groups belong to the vegetative ovarian functions), (3) the generative functions of ripening of the ova and follicles, corpus luteum formation and preparation of the endometrium for embedding of the ovum, a series of processes which occur in regular order and are terminated by menstruation if conception does not occur.

The two groups are not necessarily in direct relationship as the generative processes may begin before the vegetative processes are terminated and even the course of the different phases (the severity and duration of the menstrual bleeding) may be governed by other influences. Insufficiency of germ development may result secondarily from involvement of the ovary in general weakness of the body due to infectious, metabolic, circulatory or other conditions. When it is primary it is due to faulty function of the germ plasma which often begins after years of normal function and becomes more frequent with increasing age, especially after the fortieth year in association with marked forms of infantilism usually with pluriglandular endocrine disturbances.

In the selection of cases suitable for hormone therapy it is doubtless necessary to exclude first the cases of insufficiency of a secondary nature or at least to delay attempts to restore the function of the ovary by the administration of hormone until the primary process has been corrected. The most important forms of primary insufficiency coming under consideration are

1 Irregularities of menstruation The cause may be early death of the ovum It is possible that in some cases the administration of hormone may strengthen and increase the length of life of the ovum

2 Amenorrhea This is dependent upon hormone production The hormone content of the blood may show only slight variation from the normal or may be constantly below normal or entirely lost The possible influence of hormone treatment is difficult to determine as spontaneous cure may occur or the condition may be favorably affected by a change in the patient's mode of living and other factors Nevertheless the results of experiments carried out by Zondek and Ascheim on animals suggest the possibility that under the influence of hormone the mucosa may be prepared for embedding of the ovum and the fertility of the ova may be increased

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Microscopic study of the pelvic tissue in sclerocystic ovaritis shows that the dominant anatomicopathological characteristic is a diffuse sclerosis of the connective tissue and that the histological appearance of the cysts depends upon the stage of evolution which the ovarian follicles have reached at the time the examination is made The sclerosis is not limited to the ovary it affects more or less all of the genital system Not only the cellular tissue of the pelvis but also the whole neurovascular system of the region is involved

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appendix and pelvic colon Because of the reticulo histiocytic structure of the pelvic connective tissue and the fact that it contains many lymphoid structures it is evident that at least at first the changes which take place are of the nature of a constitutional defense reaction against the external causes threatening the organs When the process has reached the stage of sclerosis the nerve trunks of the pelvis show a diffuse neurofibromatosis which is responsible for the intense pelvic neuralgia associated with the condition

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AUDREY G MORRIS, M D

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ROLAND S CROON, M D

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Borra G A Case of Associated Extra Uterine and Intra Uterine Pregnancy (Su di un caso di gravidanza extrauterina associata a gravidanza uterina) *Clin ostet*, 1929 XXXI, 237

The patient whose case is reported was a woman thirty one years of age who began to menstruate at the age of eleven and whose menstrual periods had always been regular. She was married at the age of twenty and had had seven previous pregnancies, all of which had ended normally at term except the fifth and sixth which terminated in abortion. The first of the deliveries occurred about three years previously.

The last menstruation occurred May 4 but on June 15 there had been a slight genital hemorrhage for a day. On June 21 the patient experienced an attack of violent pain in the left lower quadrant of the abdomen which irradiated to the sacrolumbar region and was associated with pains of an expulsive character.

Following her admission to the hospital she felt well for two days but at the end of that time moderate but continuous pain began in the left lower quadrant of the abdomen. On June 30 she experienced intense pain in both lower quadrants and brownish blood was discharged from the vagina. A diagnosis of rupture of a left tubal pregnancy was made.

At laparotomy the ruptured left tube and the left ovary were removed. Uneventful recovery resulted.

On August 29 the patient suddenly experienced a uterine hemorrhage with diffuse pain in the abdomen and passed fragments of an embryo. The uterus was found enlarged and softened and the os permeable to a finger. The rest of the embryo was removed by curettage.

This was a typical case of associated intra uterine and extra uterine pregnancy ending in the usual way with abortion of both pregnancies.

The patient at first denied the possibility of pregnancy but when she was told of the findings she admitted that she had had an extramarital affair for about a year and had suffered great fear because of it. The author believes that the psychic disturbance and fear following the first conception may have caused antiperistaltic movements of the tube which prevented the second ovum from passing into the uterus. The theory that nervous antiperistaltic movements of the tube may be a cause of extra uterine pregnancy has been advanced also by others. In the author's case there was no history of malformation of the tubes, genital inflammation or general disease that might have accounted for the condition.

AUDREY G MORGAN M.D.

Modiano Intra Abdominal Hemorrhage in the Seventh Month of Pregnancy from the Rupture of a Large Uterine Varix. Caesarean Section. Recovery (Inondation péritonéale au 7^e mois de la grossesse par rupture d'une grosse varice utérine caésarienne guérison) *Bull Soc d'obst et gynec de Par*, 1929 XXVIII 332

The patient whose case is reported was a woman twenty four years of age who had been married for two and a half years. Her menstrual history was normal. At the age of thirteen she was under treatment for three months for a condition diagnosed variously as appendicitis and peritonitis. Since that time she had had no abdominal symptom. In the seventh month of her first pregnancy without any premonitory symptoms she was attacked by stabbing pains in the abdomen after urinating and became unconscious. When she was first seen by Modiano she was suffering extreme pain throughout the abdomen. The uterus was not contracted and the external os was firmly closed. Palpation of the abdomen was very painful and provoked a lively defense reaction. Spontaneous rupture of the uterus was thought probable but on account of the history appendiceal peritonitis was also considered. Immediate operation was decided upon.

When the peritoneum was opened the operative field was flooded with blood. The right border of the uterus presented numerous adhesions to the neighboring organs. The appendix not inflamed was completely adherent to the caecum. The effort to exteriorize the uterus met with difficulty. When it was accomplished a stream of blood jetted from a large vein on the anterior uterine wall. The entire fundus of the uterus was traversed by very large varices.

Fearing a repetition of the attack from the rupture of adhesions and the tearing of another vein during the two remaining months of the pregnancy or during labor, Modiano performed a classical high caesarean section. The mother recovered. The child died after four days.

FLORENCE A CARPENTER

Zuech S An Unusual Cause of Death in Eclampsia (Di una rara causa di morte in eclampsia) *Clin ostet*, 1929 XXXI 229

The patient whose case is reported was a primipara nineteen years of age who was admitted to the hospital as an emergency case on May 9, 1928, soon after the occurrence of severe attacks of convulsions followed by deep coma. For about a week she had had frequent attacks of dizziness and headache with clouding of vision. Examination of the urine showed an albumin content of 7 per cent and many hyaline and granular casts. A diagnosis of eclampsia was made and the Stroganoff Zweifel treatment given.

As the attacks recurred and the condition was serious delivery was effected by forceps. Delivery was followed by rapid improvement. On May 10, the urine showed only slight traces of albumin, but that night the patient was restless, and the next morning she experienced difficulty in breathing, there was a swelling the size of a child's fist at her neck and examination of the chest revealed râles on the left side and no breath sounds on the right side. Death occurred May 11.

Autopsy showed that the cause of death was pneumothorax. Bronchopneumonia was also present but was not serious. In the author's opinion an interstitial emphysema caused rupture of the visceral fold of the pleura, the air then infiltrating first to the hilus of the lung and then to the subcutaneous tissue of the neck. The infiltration of air in the interstitial tissue of the lungs was due to increased air pressure in the bronchioles and alveoli of the lungs resulting from the convulsive attacks which caused spasm of the glottis and decreased the size of the thorax by contracting the respiratory muscles.

Very few cases of pneumothorax in pregnancy and the puerperium are on record. Szenes, who recently reported a case before the Obstetrical and Gynecological Society of Vienna, was able to collect only five cases from the literature. The most frequent cause of the pneumothorax in the cases reported in the literature was the rupture of a cicatrized apical alveolus. **ANDREY G. MORGAN, M.D.**

Martinoli A. An Experimental Study Regarding the Transmission of Tuberculosis through the Placenta (*Contributo sperimentale allo studio della trasmissione transplacentare della tubercolosi*). *Rivista di ginec.* 1929 ix 389.

The author cites reports from the literature which show that the question of the transmission of tuberculosis from the mother to the fetus is by no means settled. As he sees in his obstetrical clinic many cases in which abortion is necessitated by tuberculosis of the lungs or larynx, he took advantage of this material to study the problem. In his investigations he inoculated spleen and liver tissue from the fetuses of women with serious and advanced tuberculosis into the peritoneal cavity of guinea pigs and after a certain length of time killed the animals and made a careful histological examination of their organs. In the cases of seven animals, the liver, spleen and lymph glands were removed and examined. In the cases of five others tissue from the removed spleen was injected into a third group of guinea pigs. The protocols of the experiments are reported in detail.

The first and second groups of guinea pigs remained in good health and showed no evidences of tuberculosis but in three of the third group which were given injections of splenic tissue from the second group signs of tuberculosis were found in the organs although the animals remained in good general condition. In the lungs there were evidences of peri bronchitis with nodules of lymphocytic infiltration

which in some places had caused necrosis of the bronchial walls and rupture of the bronchi. The lesions were very much like those seen in chronic pulmonary tuberculosis. In the liver there were nodules with a tuberculous appearance. In some of the lymph glands there was a granulomatous tissue with epithelioid cells similar to those described by Banti as occurring in gland tuberculosis and in others there was cell detritus evidently from caseation which showed numerous Langhans cells.

Although no tubercle bacilli were discovered in the lesions the author concludes from his findings that tuberculosis may be transmitted through the placenta. Experimental work done by others indicates that there is a filterable form of tuberculosis virus that is less virulent than acid fast tubercle bacilli. To such a filterable virus Martinoli attributes the lesions found in the guinea pigs. In the lymph glands of one of the animals there were lesions that looked very much like those of Sternberg's lymphogranulomatosis. This finding suggests that both lymphogranulomatosis and intra uterine tuberculosis are caused by an attenuated filterable form of tuberculosis virus. **ANDREY G. MORGAN, M.D.**

Jensen Carlén K. A Summary of the Results of the Treatment of Habitual Abortion in the Gynecological Clinic at Lund During the Period from 1904 to 1927 (*Zusammenstellung der Ergebnisse der Behandlung der habituellen Aborts an der Frauenklinik in Lund 1904-1927*). *Acta obst. et gynec. Scand.* 1929 viii 202.

At Gynecological Clinic at Lund there were treated during the period from 1904 to 1927 thirty nine cases of habitual abortion in which it was impossible to ascertain the cause. In twenty four cases the abortion occurred in the third month.

In the treatment the patient was kept in bed for as many days every month as menstruation would have lasted if the patient had not been pregnant and systematic antiluetic treatment was given although there was no evidence of syphilis in either the patient's history or the results of laboratory tests. In some cases obstetrical interference was done on the basis of the usual indications. Of the thirty nine pregnancies, twenty seven (69.23 per cent) resulted in the birth of a living child.

LABOR AND ITS COMPLICATIONS

Materzanini A. Neglected Shoulder Presentation Ending in Spontaneous Evolution (*Parto in presentazione di spalla trascurata espletatosi in evoluzione spontanea*). *Clin. obst.* 1929 xxxi 189.

The patient whose case is reported was a multi para twenty two years of age who was admitted to the hospital forty eight hours after rupture of the membranes. The fetal head was above the right ramus of the pubis. There were no active movements of the fetus and the fetal heart beat was not perceptible. The left arm protruded from the external genitalia and was cyanotic and edematous. The

left shoulder was held beneath the arch of the pubis from the posterior commissure of the vulva which was greatly distended and on the same plane as the perineum, the lateral part of the left half of the thorax of the fetus protruded.

Strong contractions of the uterus continued and distended the perineum more and more until the lateral part of the abdomen and the left hip of the fetus appeared. A hook was then applied and the child extracted. It was dead and showed beginning maceration. There was no laceration. The perineum was normal, and the patient was discharged well on the twelfth day.

This case demonstrates that a left shoulder presentation with the back forward and the head in the right iliac fossa may undergo spontaneous evolution. However such an occurrence is unusual and should not be awaited. It cannot occur unless the contractions of the uterus are strong, the pelvis is large, and the fetus is small or is dead and macerated so that its tissues are completely relaxed.

AUDREY G. MORGAN M.D.

Martin E. Protection and Incision of the Perineum (*Dammenschutz und Dammschnitt*) *Monatsschrift für Geburtshilfe und Gynäk.* 1928 LXXI 412

In man the levator ani muscle is not of a constant size like the skeletal muscles. Whereas in animals it is a broad, powerful muscle plate on both sides of the pelvis without any connection with the coccygeus muscle, in the human being the inner layer of the coccygeus muscle becomes a part of the pelvic floor and is firmly united with the posterior edge of the levator ani muscle. The latter in its muscular part is variously developed and therefore of varied functional value.

The urogenital diaphragm which lies transversely in front of the levator space forms a uniform structure with the levator surface only in the perineum. Only during labor, when the edge of the levator and the urogenital diaphragm are stretched out, do they form a thin, unified surface so that a lateral incision of slight depth will strike them both. After labor the cut in the edge of the levator made by a deep lateral incision retracts deeply into the tissues, a fact of great importance in the suturing. When a median incision is made or a perineal tear occurs conditions are different. Under such circumstances the levator and urogenital diaphragm are separated where they are firmly adherent and the separated parts are easily united by suture. Therefore an incision to relieve strain should always be made in the center of the perineum.

Spontaneous tears in the edge of the levator muscle occur most frequently near the pubic region, where the muscular portion passes over into the fascia. In many instances the levator is torn without involvement of the perineum. Retraction of the perineum in labor can in no way influence tearing of the levator ani muscle. It is not always possible to prevent tearing of the levator by incision. The perineum should be protected to prevent third degree tears, but no

importance is to be ascribed to its conservation as the tension reducing effect of a perineal tear or incision may prevent a too extensive tear in the edge of the levator muscle. Bilateral tears usually occur in cases in which the perineum has been allowed to stretch too quickly. Alleviation of pain in the second stage of labor serves also to protect the pelvic floor since when relaxed the levator ani muscle stretches more slowly and easily than during painful spasms.

KABOTH (C)

PURPERPERIUM AND ITS COMPLICATIONS

Devraigne L. Balze L. and Mayer M. Puerperal Scarlet Fever (Sur quelques observations de scarlatine puerpérale survenues à la Maternité de l'hôpital Lariboisière) *Bull. Soc. d'obst. et gynec. de Paris* 1929 XVII 337

The authors report six cases of puerperal scarlet fever occurring in two small epidemics, two months apart in the obstetrical division of the Lariboisière hospital. In one case the infection followed abortion and in five cases it followed delivery at term. All of the women were primiparae.

In the first case of the first epidemic the initial symptoms appeared on the third day after delivery, which took place twenty-four hours after the patient's admission to the hospital. No recent febrile illness had occurred in the patient's family or among her associates. In the second case the infection occurred on the tenth day after delivery. The woman was in a ward communicating with the ward in which the first patient was taken ill. One of the authors, who was called in consultation on the first case, came down suddenly with typical scarlet fever.

The four other cases constituted the second epidemic. The first patient to develop symptoms was a girl of seventeen years who entered the service in labor, without fever, and was delivered three days later. No case of scarlet fever could be discovered in her family or among her associates. The infection became apparent on the seventh day after her admission. The second patient in this group was in the labor ward during the same twenty-four hours as the first patient. She presented the first symptoms on the seventh day after delivery. The third woman entered the post delivery service while one of the two other patients was still there and just after one had been removed. She was in a communicating ward. The scarlet fever developed on the seventh day. In the postabortal case which occurred in the second epidemic the infection became manifest on the third day after an abortion at the end of three and a half months of pregnancy and was complicated by otitis with subsequent mastoiditis.

The contagiousness in these epidemics appears to have been slight. The wards were crowded and it was noteworthy that persons at a distance, not those in close contact, contracted the disease. None of the women had the type of sore throat that is usually present at the onset of scarlet fever; there was only a slight buccopharyngeal enanthema. However, in

every case the onset was characterized by a very definite infection of the genital tract. The possibility of a genital portal of entrance was therefore suggested. The physician who developed the condition had a characteristic sore throat. In one case a diphtheritic false membrane was present before the exanthema appeared.

With regard to the differential diagnosis between scarlet fever of puerperal origin and puerperal scarlatiniform erythema the authors state that the former is characterized by vomiting and a very rapid pulse. In the cases reported, the puerperal infection was very discrete whereas scarlatiniform erythemas appear usually in cases of severe generalized puerperal infection with signs of grave septicæmia. In puerperal scarlet fever the eruption is accompanied by a discrete exanthema rather than by sore throat.

None of the infants in the cases reported contracted the disease. They were separated from the mothers as soon as the diagnosis was made.

LE LORIER who discussed this report, stated that in his opinion it was unnecessary to separate the infants from the mothers. FLORENCE A. CARPENTER

Chabanier H. Laquière M. and Chevailler L.
Puerperal Colon Bacillus Pyonephrosis with Pseudotuberculous Lesions (Pyonéphrose post gravidique à colibacilles avec lésions pseudo tuberculeuses) *J d urol méd et chir* 1939 XLVII 513

In the case reported that of a woman aged twenty five years the urine had been examined on a number of occasions during pregnancy and had always been found normal. Delivery was normal as was also the child. In the first week of the puerperium the urine became turbid and a low irregular fever developed. This state continued for five or six weeks. The fever then became regular and the turbidity of the urine increased. A crisis of pain in the right lumbar region was followed by the expulsion of several small calculi formed wholly of tricalcium phosphate.

At this stage the authors were called in. They found the right kidney enlarged and tender to the touch. The urine contained a large amount of pus and colon bacilli but no other organisms. A diagnosis of pyonephrosis was made.

In the following month five typical retention crises occurred. Medical treatment was of no avail. When pyeloneuritis developed the patient consented to operation. Nephrectomy was followed by rapid improvement.

The aspect of the kidney suggested ulcerocaseous tuberculosis with secondary infection. The kidney was very large with marked adipose perinephritis. On section it presented a speckled appearance. The pelvis was greatly dilated but not deformed. The wall was thickened but neither congested nor ulcerated. The calyces were also dilated. The papillae at the base of the smaller calyces were collapsed. At the papillocalycular angle the papillae presented small ulcerations. At the upper pole these were deep and appeared to have destroyed a large part of the renal parenchyma. The aspect of the paren-

chyma was that seen in acute nephritis but the localized ulcerations strongly suggested tuberculous lesions. Histological examination, however, failed to reveal anything similar to tuberculosis.

FLORENCE A. CARPENTER

NEWBORN

Murphy D. P. Ovarian Irradiation and the Health of the Subsequent Child. A Review of More Than 200 Previously Untreated Pregnancies in Women Subjected to Pelvic Irradiation. *Surg Gynec & Obst*, 1929 XLVIII 766

From a review of more than 200 previously unreported pregnancies in women subjected to pelvic irradiation before or after conception and an analysis of 320 pregnancies following irradiation which have been reported in the literature the author draws the following conclusions:

1. It appears reasonable to suspect that certain of the gross structural defects found in children irradiated *in utero* are the results of such irradiation.

2. There is as yet no definite indication that ovarian irradiation prior to fertilization has any detrimental influence upon the health or development of subsequent children. HARVEY B. MATTHEWS M.D.

MISCELLANEOUS

Henkel M. Recent Results in Clinical Obstetrics (Neue Ergebnisse fuer die klinische Geburtshilfe) *Deutsche med Wchnschr* 1928 II 2132

Henkel discusses the obstetrical problems of the last ten years attributing first importance to improvement of the life prospects of the child during birth particularly in cases of contracted pelvis, a matter which has recently been brought into prominence by the well known and remarkable observations and conclusions of Hirsch.

In the management of labor in cases of contracted pelvis operations to widen the pelvis have been practically abandoned and abdominal section with opening of the uterus in the lower segment of distention is the method most in favor. In his discussion of this method, Henkel raises a number of objections to the extraperitoneal cervical procedure preferred by Kuester and Doederlein. He points out that the latter operation is often impossible technically on anatomical grounds.

Henkel states that if the child is not viable vaginal delivery should be attempted. The Braxton Hicks method is still a good procedure. To secure engagement of the head in high position, Kjelland's forceps were advocated for some time. Not much has been heard of this model recently at any rate it is certain that the Kjelland forceps are by no means so superior to the Naegele forceps that they are to be recommended to the practitioner as an all purpose instrument.

In deciding how far the head has advanced in the pelvis Henkel relies on bimanual palpation under deep narcosis. He emphasizes that in the rest of the

management of labor (the measures taken to render its course painless are briefly reviewed) an understanding of the mechanism of birth for the individual case particularly in contracted pelvis constitutes the basis of the obstetrician's art. Unlike Hirsch he believes that there should be no increase in the number of operations, particularly abdominal sections. He demands also restriction of vaginal examinations since if such examinations are made often and one goes high up it is impossible to avoid carrying the micro-organisms present in the vagina into the uterus and the wearing of rubber gloves will not prevent contamination. The progress of labor he believes should be controlled chiefly by external manual examination.

Henkel states that there is no necessity for internal pelvic measurements during labor but it is important to know the position of the head and the likelihood of its being able to pass through the pelvis under the driving force of the labor contractions. The latter are best stimulated and controlled by preparations of the posterior lobe of the pituitary gland.

With many others Henkel has ceased to regard the avoidance of perineal tears as evidence of par-

ticularly good management of labor. On the contrary he believes that the more the second stage of labor is shortened the better it is for the tissues concerned and to shorten this stage he makes a deep median perineal incision extending to the sphincter. Such an incision heals better as a rule than spontaneous tears in which the tissue is severely bruised.

For the arrest of postpartum hemorrhages caused by incomplete tears Henkel recommends clamping the torn vessels with forceps from the vagina instead of suturing or tamponade. The uterus is drawn down and the forceps are applied under the control of the eye to the uterine vessels on both sides including the adjacent parametrial tissue.

Other subjects discussed by Henkel are the early diagnosis of pregnancy (Zondek Aschheim method) the recognition of the toxicoses of pregnancy the question of the reciprocal injurious action of diseases and pregnancy and the influence of the roentgen rays on the product of conception. On the basis of his observations with regard to the effect of X-ray irradiation, he urges great caution in the treatment of functional uterine hemorrhages with temporary roentgen sterilization. FRANK (G)

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Peacock A H Perinephritic Abscess *Surg, Gynec & Obst* 1929 XLVIII 757

The author discusses the diagnosis of perinephritic abscess on the basis of a study of twenty one cases which he reports

In 1915 Richardson used the term 'primary perinephritic abscess,' indicating that the infection had followed a metastatic hæmatogenous course In 1924 Hunt classified perinephritic abscesses into those of renal and those of extrarenal origin the former including abscesses associated with pyonephrosis lithiasis traumatism and tuberculosis and other infections of the upper urinary tract

In cases of perinephritic abscess of extrarenal origin there are usually no pathological changes in the urinary tract Braasch supports the view that such abscesses are cortical or subcapsular and arise from the periphery of the kidney Furunculosis is often found to play a part in their causation

Abscesses of renal origin are the direct extension of suppuration to the cortex and are formed beneath the renal capsule

Abscesses of the anterior surface are extremely rare There was no abscess of this type in the cases reviewed by the author In two cases there were abscesses at the upper pole of the kidney extending upward perforating the diaphragm and giving rise to secondary lung abscesses

The ages of the author's patients ranged from eight to sixty three years The average age was thirty two and a half years The average age of Richardson's patients with primary abscess was twenty nine years Twelve of the author's twenty one patients and sixteen of Richardson's twenty patients were males The higher incidence of the abscesses in males is attributed to the greater frequency of traumatic infection in males

Fever was present in all of the author's cases There was a daily elevation to from 101° to 104° degrees F followed by a sharp decline with an accompanying sweat In most cases there were mild preliminary chills followed by exhaustion and weakness Nausea and vomiting were frequent symptoms due to intoxication and absorption from the abscess In some cases they were severe but they ceased with the chills and fever when the abscess was incised and drained

In the cases of abscess of the extrarenal type the duration of the symptoms varied from nine days to six weeks and in a number the abscess was preceded by furunculosis or skin infection In the cases of abscess of the renal type the duration of the symptoms was much longer, in some instances being as long as five years Most renal infections develop

slowly and extend beyond the kidney only after considerable drainage has been done

Pain is usually severe As a rule it is a unilateral backache at the level of the third or fourth lumbar vertebra in the costovertebral angle It was present in all of the cases reviewed It was constant and throbbing and was increased by walking or movement of the vertebrae

Irritation of the psoas and erector spinae muscles caused spasm rigidity, and partial fixation of these muscles The presence of an abscess in the renal niche caused rigidity of the spine and at times a temporary lordosis Swelling was present in seventeen of the cases reviewed In some of them it was slight being discovered only when the patient was lying perfectly straight on a hard flat bed In that position also it was possible to demonstrate a lateral curvature of the spine due to pressure of the abscess To reach objects on the floor the patient with a perinephritic abscess squats instead of stoops

Leucocytosis was invariably present and was more marked than that commonly associated with the degree of fever present

In cases of extrarenal perinephritic abscess urological symptoms were slight or absent The most common urinary symptom was painless frequent urination Urinary infection probably plays a small rôle in these abscesses and may be a secondary rather than a primary infection In bacillus coli infection of the upper urinary tract hæmaturia is not infrequent

At times the diagnosis of perinephritic abscess is very difficult The deep position of the suppuration the perfect protection of the renal fossa and the absence of urinary findings obscure the origin of the pain Perinephritic abscess is often mistaken for tuberculosis of the hip or spine Richardson says

Cystoscopy, ureteral catheterization and X ray although essential in excluding disease of the urinary tract or spine may be of no positive help in these cases The three principal signs are continued fever leucocytosis and abdominal or costovertebral tenderness The X ray finding of clouding of the line of the psoas muscle is a helpful but not infallible sign The author emphasizes the importance of stereoscopic X ray examination

CLAUDE D HOLMES M D

Jacobs A A Case of Hæmaturia Arising from One Segment of a Double Kidney, Treated by Resection *Brit J Surg* 1929 XVII, 1, 9

The author's case was that of a woman forty years of age who gave a history of continuous hæmaturia of five months duration unaccompanied by other urological symptoms The general examination was negative The urine was deeply stained

management of labor (the measures taken to render its course painless are briefly reviewed) an understanding of the mechanism of birth for the individual case particularly in contracted pelvis constitutes the basis of the obstetrician's art. Unlike Hirsch he believes that there should be no increase in the number of operations particularly abdominal sections. He demands, also, restriction of vaginal examinations since if such examinations are made often and one goes high up it is impossible to avoid carrying the micro organisms present in the vagina into the uterus and the wearing of rubber gloves will not prevent contamination. The progress of labor, he believes, should be controlled chiefly by external manual examination.

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FETTER (G)

erated upon first. In cases of anuria, the kidney with congestive symptoms should be operated upon before the other one even when it is the more severely damaged. Small stones which have entered the ureter and may cause anuria should be removed first. Pyelotomy, when practicable is always to be preferred to nephrotomy. Nephrectomy is to be considered only in cases in which one kidney has been completely destroyed or is acutely suppurating and the other exhibits sufficient function.

Operative results are as a whole unfavorable. The late postoperative mortality is high and recurrence of stone is frequent, possibly because of a hereditary diathesis. The prognosis is especially unfavorable in cases of anuria from recurrence following operation for bilateral lithiasis.

When both ureteral and renal stones are present an attempt should be made first to remove the stone from the ureter by operation or through the natural passages as otherwise following the kidney operation a fistula of the renal pelvis is almost unavoidable. Papaverin is recommended as an antispasmodic during or following attacks of renal colic. When conservative methods fail in cases of stone in the ureter operation must not be delayed too long. In cases of bilateral ureteral stone with anuria nephrotomy is to be preferred to ureterolithotomy as the former hastens the return of renal function. Bilateral ureterolithotomy is suitable only for special cases. JOSEPH (Z)

Papin M. Partial Nephrectomy for a Large Serous Cyst. Late Results. (Néphrectomie partielle pour grand kyste séreux résultats éloignés)
J. d'uról méd. et chir. 1929 xxvii 516

A woman of thirty seven years complained of pain in the right renal region and frequent and painful urination. Examination revealed hydronephrosis of a ptotic right kidney with colon bacillus infection. Under medical treatment the symptoms of infection rapidly disappeared but as the pain continued in the right renal and the appendicular region and radiated into the lower extremity operation was performed after about seven weeks with the idea of removing the appendix decapsulating the right kidney and doing a high nephropexy.

A serous cyst the size of a hen's egg was found attached without a pedicle to the lower pole of the kidney. Wedge shaped resection was done the cyst and the adjacent portion of the kidney being removed in one block. The inferior calyx was preserved. Decapsulation and high nephropexy followed. The postoperative course was normal.

Examination of the patient three years and three months later showed almost no functional deficiency of the right kidney. The hydronephrosis was about the same (13 c. m.) but had not become infected again and was not painful.

Gunsbourg in 1890 was able to find only thirty nine cases of large serous cyst of the kidney reported in the literature. Later Albarran collected twenty five more. Papin believes that it is almost impossible

to diagnose such a cyst before operation unless it is very large.

In the discussion of this report, E. PAPIN called attention to the fact that the tumor is mobile elastic, and painless. In the diagnosis the ureteral shadow is important. An intraperitoneal tumor compresses the ureter but does not deviate it whereas a retroperitoneal tumor may displace it as far as the median line. Hydronephrosis and serous cyst of the kidney can be differentiated by pyelography.

MICHOV stated that the two most frequent causes of error, hydronephrosis and ovarian cyst, can be differentiated by separation of the urines and pyelography.

MEXER reported that he had seen a serous cyst attached only to the sheath of the psoas which displaced the ureter so that it passed in front of the sacrum.

FLORENCE A. CARPENTER

BLADDER, URETHRA, AND PENIS

Lackum W. H. von and Mitchell J. I. Acquired Posterior Vesical Lip Obstruction. *J. Urol.* 1929 xxi 57

In addition to enlargement of the commissural and Albarran groups of glands there are other causes of posterior vesical lip obstruction of an acquired nature to which the name inflammatory median bar formation has been applied. This condition may develop at any age after adolescence. It has been attributed to the presence of chronic infection of gonorrheal or other origin in the adneta of the lower part of the urinary tract.

Although the literature shows that patients have been subjected to the punch operation when median bar formation has been the only obstructive lesion present the results of this form of treatment, even in uncomplicated cases, have frequently been most unsatisfactory. In some instances subjective symptoms have been unrelieved or only partially relieved. In others such symptoms as frequency, burning and cloudiness of the urine have been a postoperative development.

The postoperative course is frequently attended by symptoms suggestive of septicæmia. These symptoms are attended by conditions which are not without danger and may not completely clear up even during a long convalescence.

Therefore, because of the underlying infection inflammatory median bar formations without fibrosis are unsuited for surgical treatment of any kind which breaks the continuity of the surface.

Recognition of chronic infection of the prostate and seminal vesicles as the etiological factor of the disorder is the key to the therapeutic measures. In uncomplicated cases treatment of these infected adneta along the usual lines by massage instillations of mild silver protein and the application of the posterior Kollman dilator to the prostatic urethra will relieve all symptoms subjective and objective.

The inflammatory median bar formation is not a local process. Therefore it is not a surgical entity.

with blood. It contained no casts and was sterile. On cystoscopic examination, two ureteral orifices were seen on the left side on a common ureteral ridge. The efflux from the outer and higher orifice was deeply blood stained whereas that from the inner and lower one and that from the right ureteral orifice was clear. The indigocarmine functional test was normal. Pyelography revealed two pelves on the left side which were completely separated and occupied different levels. The superior and inner one was the smaller. The lower and outer pelvis was normal. The pelvis on the right was of the bifid type. Accordingly, there was a complete reduplication of the pelvis and ureter on the left side. The hæmaturia was confined to the lower portion of the left kidney, but its cause was not determinable. As the hæmorrhage persisted resection was done. Recovery resulted.

Microscopic study of the lower half of the left kidney revealed an interstitial hæmorrhage associated with considerable round cell infiltration. The renal parenchyma showed early chronic changes especially in the glomeruli. The tubular epithelium showed intense cloudy swelling and some catarrh.

Jacobs states that chronic nephritis may be present without clinical evidence. It is probably the underlying cause in many cases of so-called idiopathic or essential hæmaturia and should be suspected in cases of hæmaturia in which no cause can be found on complete urological investigation. Long continued hæmorrhage may necessitate nephrectomy to save life. **LOTIS NEWELL MD**

Legueu F, Fey B and Truchot, P Pyelography and Pyeloscopy (*Pyélographie et pyéloscopie*) *J d urol méd et chir*, 1929 xxiv 512

The authors emphasize that pyelography and pyeloscopy complement each other. When pyeloscopy is done it is important that the pelvis be completely filled. In a case reported by Marion incomplete filling not the method was responsible for the error in diagnosis.

The authors make a pyelogram in the course of every pyeloscopy. The two methods have different aims: from pyeloscopy we seek information as to the motility of the pelvis and ureter, and from pyelography, information as to the morphology in a static condition. Papin is wrong in asserting that pyeloscopy shows only abnormal shapes of the pelvis. It demonstrates rather that supposedly abnormal shapes are but aspects of the pelvis in the course of normal contractions, physiological deformations without pathological significance.

FLORENCE A. CARPENTER

Chauvin E and Empereaire R The Technique of Pneumopyelography (*Sur la technique de la pneumopyélographie*) *J d urol méd et chir*, 1929 xxiv, 522

In pneumopyelography which is of value especially in the detection of calculi, the contours of the pelvis are frequently indistinct. There are two reasons for

this: one is the escape of part of the injected gas by way of the ureter before completion of the photographic exposure and the other in the authors' opinion is the presence of urine in the ramifications of the calyces which in dorsal decubitus are lower than the pyelo-ureteral orifice. The authors technique to obtain a clear picture is as follows:

The patient is placed in the lateral position on the normal side. To inject the gas (atmospheric air) a 100 c.c. syringe with an air tight but easily working piston is used. Clude's manometer is interposed between the air filled syringe and the opaque ureteral catheter. When all is in readiness for the taking of the picture the piston of the syringe is slowly pushed in until the manometer indicates a pressure of from 60 to 80 cm. of water. The signal is then given to the roentgenographer and while the exposure is being made the manometer is watched and the pressure kept constant. After the exposure the plug is removed and the air is allowed to escape from the renal cavity, but the catheter is not removed until an ordinary pyelogram has been made. This has been the authors' practice up to the present time in order that a comparison of the results of the two procedures may be made which is especially useful when the pelvic image is confused by the superposition of an image due to gas in the later mes.

FLORENCE A. CARPENTER

Frankenhelm P The Treatment of Bilateral Kidney and Ureteral Stones (*Die Behandlung doppelseitiger Nieren und Uretersteine*) *Chirurg* 1929 i 337

According to recent statistics based on a vast material the frequency of bilateral kidney stone varies between 9 and 14 per cent. The chief aid in the diagnosis is the roentgen examination. The indications for operation must be much more cautiously placed than in cases of large solitary kidney stone, and must be based on the conditions presented by the individual patient. Acute pyonephrosis or complete blocking of both ureters may demand immediate operation. Operation may be necessary also to prevent further injury to the kidneys. In any case the expected benefits should be considered in relation to the operative risk. Under some conditions conservative treatment may give better results than operation. The decision must be governed not only by the pain, fever and suppuration but also by the location, form and size of the stones.

Simultaneous operation on both sides is to be considered only in the cases of young persons without infection in the urinary tract. When the patient is in poor general condition or a uroepic state the advisability of operation even on one side may be difficult to determine. If the more extensively diseased kidney is threatening life (pyonephrosis) it should be subjected to nephrostomy but not extirpated until the stone on the other side has been removed. If the more extensively diseased kidney is not endangering life, the better kidney should be op-

The author recommends a prophylactic phimosi operation more frequent biopsy and when cancer is present, radical operation followed by roentgen therapy. When the case does not come to operation too late the prognosis is more or less favorable.

I. BANNER VMDT (Z)

GENITAL ORGANS

Wesson M. B. Traumatic Hydrocele. *California & West Med.* 1929 xxi 127

Wesson reviews thirty cases of traumatic hydrocele. He says that the condition is due to low grade infection with repeated slight traumata. Insurance agents attribute it to strain just as the cultists say 'dislocated vertebra' for industrial lesions overlooking the fact that a vertebra cannot be dislocated 1,195 lbs. of pressure crushing the neural arch and 800 lbs. more pulverizing the body but leaving the articular joints intact and unaffected. In cases of hydrocele tuberculous epididymitis and new growths of the testicle there is great danger of attributing the condition to an injury when it was present before the injury was received.

Any inflammatory process which interlopes with the lymphatic drainage of the tunica vaginalis may cause hydrocele. An acute hydrocele tends to become cured as the primary disease becomes cured but in some cases the exciting factor may disappear and leave behind a persistent hydrocele.

Symptomatic hydrocele is most commonly caused by gonorrhea and tuberculosis but there are many other causes. A negative history of venereal disease is valueless. In all cases an examination of the seminal vesicles should be made. Non-venereal prostaticitis is much more resistant to treatment than prostatitis due to gonorrhea.

Inflammation is the reaction of injury. Ordinary trauma is followed by pain, loss of function, swelling and discoloration. Hydrocele can be attributed to trauma only if ecchymosis was present at the time of the injury. Pain is due chiefly to epididymitis.

When the condition is acute the treatment should usually be palliative but sometimes tapping may be necessary. In chronic cases tincture of iodine is sometimes injected but as a rule such treatment is unsatisfactory. Five per cent mercurochrome does not cause recurrence of the epididymitis and may produce a quick cure. In the cases of young patients tapping is rarely justified. The underlying condition should first be cured and the sac then removed.

PENJAMIN F. ROLLER M.D.

MISCELLANEOUS

Scudder S. A. and Belding D. L. A Group of Higher Bacteria from the Genito Urinary Tract. *J. Lab. & Clin. Med.* 1929 xiv 801

The authors discuss non-gonorrheal infection of the genito-urinary tract. The common pus forming bacilli and cocci have been found in numerous cases

but as a rule the higher bacteria have not been associated with chronic irritation. Three strains of higher bacteria have been isolated from the genito urinary tract. Strain A from the cervix of a child, and Strains B and C from the prostatic secretions of patients with clinical signs of chronic urethritis but no positive clinical or laboratory evidence of gonorrhea. Their association with chronic irritation of the genito urinary tract and their superficial resemblance to streptococci make them of clinical as well as bacteriological interest.

In obtaining the original cultures from the child, plates were streaked with the secretions directly from the upper vagina and cervix. The cultures from the adults were made from fresh centrifugized prostatic fluid on veal infusion agar plates. In each instance the colonies on the original plates were numerous and plaque like and varied from the size of a pin point to a diameter of 1.0 mm. A culture medium of the hormone type was used and was prepared with minimal heating and filtration. This medium was used in the form of broth 0.5 per cent agar and 1.5 per cent agar with and without defibrinated blood or other enrichment. Comparative fermentation tests were made. The organisms were cultured in 5 per cent gelatin in hormone broth for seven days at a temperature of 37 degrees C. and were studied in deep cultures and in sealed hanging drop cultures on a warm stage microscope. The pathogenicity of the genito urinary strains was tested in mice guinea pigs and rabbits by pentoneal, intramuscular and oral administration. The serological relationship was studied by agglutination tests with immune sera for Strains A, B and C tested against the genito urinary and respiratory strains.

In fluid cultures the organisms resembled long chained short chained and lancet shaped diplococci with a tendency toward parallel arrangement of the long chains. The organisms did not take the acid fast stain, and their gram stain was sometimes negative and sometimes positive in the same filament. They were non-motile. In broth, the growth appeared consistently in the form of creamy white tufts adherent to the walls of the culture tube by means of delicate trailing filaments. In semi solid agar no surface growth occurred, but the growth was grayish and semi diffuse below the surface, and deep growth gave rise to discrete radiate colonies. Facultative anaerobes occurred consistently. On solid agar the colonies were plaque like and ranged from 0.1 to 1.0 mm in diameter. The typical colony had a depressed center and a concentric ridge between the center and the periphery. On blood agar the colonies appeared greenish and non-hemolytic although Strain C produced a faint halo in the surrounding medium. The genito urinary strains grew best at a temperature of 37 degrees C. At ice box temperature there was no growth, at 22 degrees C. growth was sluggish, and at a temperature above 53 degrees C. the cultures were killed in ten minutes. Optimum growth occurred at a hydrogen ion concentration of from pH 6.9 to 7.2.

It is the end result of an inflammatory reaction to an infection that invaded the adneta of the lower part of the urinary tract

It is emphasized that no reference is made to the type of case in which the underlying lesion is adenomatous and that more time must elapse before it will be known positively whether or not later recurrences will follow conservative treatment. This report is only preliminary.

McCarthy J F, Stepien C T and Halperin S J
Sarcoma of the Bladder *Am J Surg* 1929 vii
229

A review of the literature on sarcoma of the bladder is accompanied by a report of 2 cases. Only 128 cases are on record.

Sarcoma of the bladder may occur at any age but appears most frequently in the first and after the fifth decade of life. It is 3 times as frequent in men as in women. It is more often primary than secondary. It is rapid in growth and exceedingly malignant. It is usually situated on the posterior or lateral wall of the bladder and rarely involves the trigone. The spindle cell variety is by far the most common. Early metastases are frequent, and generally occur in the lungs and pleura.

The principal early sign is sudden painless hematuria. Pain is inconstant. Urinary frequency is often present. Cystoscopy and biopsy offer the only certain means of diagnosis. Surgical measures are usually unsatisfactory, probably because of the delay in the diagnosis and the rapid growth of the tumor.

Of the 2 patients whose cases are reported by the authors one died four months after operation. The other was living and apparently well eighteen months after leaving the hospital.

HENRY L. SANFORD M D

Bieberbach W D and Peters G N. Primary Epithelioid Carcinoma of the Male Posterior Urethra *J Urol* 1929 xiii 105

Carcinoma of the urethra is a rare condition. It occurs most commonly after the fiftieth year of age. As a rule it is of the squamous cell type. A review of reported cases suggests that trauma and intra-urethral irritation from infection or stricture are contributing factors. Long standing infections followed by stricture of the membranous urethra at or after the age of fifty years, the so-called cancerous age, are symptoms which may be regarded with suspicion.

The diagnosis is difficult. The carcinoma causes partial obstruction the symptoms of which are easily confused with those of stricture of the deep urethra and may be overlooked until the condition is far advanced. As the outstanding symptoms—hematuria, marked pain following urination and fistula with induration in the deep perineum—are of questionable diagnostic aid a tissue resection should be done for biopsy.

The prognosis is very poor under all conditions. In many of the advanced cases death results fol-

lowing operation. A large percentage of the patients develop recurrences with metastases and die within from six to ten months. However Kretschmer reports a case in which there were no recurrences two years after radical operation. Early diagnosis is essential as radical operation offers the only chance for cure. According to Bieberbach's experience in late cases of this type of cancer, radium and the X-ray are of little value. Bieberbach found that radium hastens necrosis of the malignant tissue producing a fatal toxæmia. LOUIS KETZEL M D

Majanc A. Cancer of the Penis (Cancer penis) *Vestnik Chir* 1928 xiii 283

Majanc reports eighteen cases of cancer of the penis. Phimosis was present in seven but in the records of several no information regarding the presence or absence of this condition was given. The reports in the literature indicate that phimosis is an important factor in the development of cancer of the penis. Next in importance is trauma. The cases observed by the author were admitted to the clinic between the second and seventh months of the disease. Attention is called to the fact that cases coming in latest showed as a rule a more favorable course. In two instances multiple carcinomatous ulcers were present. Histologically the lesions were of the cancer keratodes or planocellularis forms which usually are more benign than the other types.

In ten cases the glands and the prepuce were affected. In eight the corpora cavernosa were also involved. In one case the prepuce alone was affected. Once the scrotum was included in the involvement.

In only one case was there difficulty in micturition. Cachexia usually occurred late but in one case was present in the fourth month. In two cases there was a fistulous perforation of the prepuce. None of the eighteen cases came to autopsy. In no instance was there clinical evidence of metastases in the internal organs. In sixteen cases the inguinal glands were swollen. In twelve the swelling was bilateral and in four cases occurred only on the left side. In one case there was thickening of the lymph vessels along the dorsum penis and in another enlargement of the lymph glands of the mons veneris. The regional lymph glands were cancerous in only a minority of the cases in which they were enlarged. In two cases in which the condition had been present for four and five years respectively, there was no enlargement of the lymph glands. In nine cases the lymph glands were removed and the area was given roentgen treatment. Of the eight patients so treated who were followed, one was free from recurrence six years, one five years, one three years, one one year and eight months and two one year after the operation. There were no deaths. In one instance removal of the lymph glands was followed by edema of the lower extremities which lasted several years and in another by a persistent lymphorrhea. One patient died after discharge from the hospital from profuse hemorrhage.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Annovazzi G The Experimental Production of Bone by the Injection of Calcium Salts (Produzione sperimentale di osso mediante iniezioni di un sale di calcio) *Arch ital di chir* 1929 xxiii 537

The author reports experiments in which calcium salts were injected into the ears of rabbits and into the triceps tendon of the foreleg of a dog. It was found easy to bring about calcification of connective tissue. In a few cases true ossification results. In the ear of a rabbit an injection of calcium salts which caused an irritation which must have changed the condition of the circulation was followed by considerable ossification in the perichondrium and adjacent connective tissue in a period of eighty five days. In one of the animals a membranous ossification was followed by an atypical endochondral neoplastic ossification extending downward from the surface such as was seen under normal conditions by Bruni and others and in certain tracts in cartilage by Reichert and Meckel. This case showed that not only was ossification brought about in a calcified zone but that an osteogenic condition was created in cartilage into which calcium had not been injected directly.

The findings prove that in certain forms of connective tissue the presence of calcium salts and the occurrence of changes in the circulatory conditions are sufficient to bring about ossification which may invade the adjacent cartilage even when the latter is not of the hyaline type. **AUDREY G MORGAN M D**

Andrei O The Experimental Reproduction of Acute Osteomyelitis with a Filtrable Virus (Sulla riproduzione sperimentale dell'osteomielite acuta con virus filtrabile) *Arch ital di chir* 1927 xxiii 591

In an article published in 1927 the author reported that acute osteomyelitis cannot be produced with a filtrable virus. This finding has now been confirmed by Rossi.

Andrei said in his previous article that the filtrates and plasmolysates did not show any special toxicity that could be attributed to derivatives of bacteria and in quoting this statement Rossi said that he denied the presence of toxins in filtrates of cultures of staphylococci. This is incorrect. Andrei's experiments were made only to determine whether filtrates of staphylococci cause osteomyelitis and did not touch on the question of the toxicity of the filtrates in general. If he had been investigating the toxicity of the filtrates the experiments would have been carried out in quite a different way. He meant by the statement only that no toxicity was demonstrable in

the filtrates in the doses which he injected. He expressed no opinion in this sentence as to whether they are toxic in different doses and under different experimental conditions. In fact, when he said in another sentence that the toxicity of the plasmolysates was due in part at least to the potassium nitrate contained in them he indicated that a part of it was due to other substances.

AUDREY G MORGAN M D

Hartfall S J and Hescilne L B A Case of Osteomyelitis of the Spinous Process of a Dorsal Vertebra *Brit J Surg*, 1929 xiii 184

The patient whose case is reported was a boy eight years of age. The first symptoms were vomiting and a dull pain in the back. When the child was admitted to the hospital his temperature was 101 degrees F and his respiration 36. Before his admission a diagnosis of meningitis had been made although the classical signs of this disease were lacking. Hyperaesthesia was present in the back with its maximum intensity in the lower dorsal and upper lumbar regions. Lumbar puncture yielded a slightly turbid spinal fluid with a few polymorphous leucocytes. Cultures of the spinal fluid and roentgen examination of the spine were negative.

The symptoms rapidly increased in severity. Opisthotonus developed, the temperature rose to 107 degrees F, and the child became delirious. Death occurred on the eighth day.

Autopsy revealed osteomyelitis apparently originating in the spinous process of the sixth dorsal vertebra and associated with the burrowing of pus in the muscle sheaths up and down the spine and into the spinal canal. The dura was perforated at one or two points. The spinous process and laminae of the sixth vertebra had been stripped bare of periosteum but the body of the vertebra was not involved. Cultures yielded a pure growth of staphylococcus aureus.

WILLIAM A CLARK, M D

Bertocchi, A Grafts of Fixed Fat in the Marrow of the Diaphysis of the Femur (Innesti di grasso fissato nel midollo diafisario del femore) *Arch ital di chir* 1929 xxiv, 175

Many materials have been used for the filling of bone defects. The author reports experiments in which he used fat taken from the fatty capsule of the kidney of rabbits, fixed with 10 per cent formalin, and then kept in alcohol in hermetically sealed glass flasks for periods varying from five to two hundred and forty days. This fat was substituted for marrow curetted from the femora of other rabbits.

The first effect of the introduction of the fixed fat was the arrest of the hemorrhage caused by the removal of the marrow. Clinically, the grafts were

None of the organisms produced indol, reduced nitrates or gave a positive Voges Proskauer reaction. They did not liquefy gelatin and they were insoluble in bile. They fermented dextrin, galactose, levulose, maltose and saccharose, but they did not ferment arabinose, dulcitate, inulin, rhamnose, mannite, salicin or xylose.

The organisms showed no pathogenicity for laboratory animals though they were recovered from the heart blood twenty-four hours after their intra-peritoneal inoculation. Agglutination tests were made with difficulty.

A satisfactory identification of the organisms can not be made because of the prevailing confusion in regard to the classification of the higher bacteria. They have certain points in common with the classical *Cladotrix dichotoma* of Cohn though are definitely at variance in others. Morphologically and culturally they seem consistent with Kligler's description of *Cladotrix placoides* isolated from dental caries.

The methods of differentiation between gonorrheal and non-gonorrheal urethritis and vaginitis are time consuming. Baker claims that from 15 to 20 per cent of genito-urinary cases seen in private practice are of non-venereal origin. The authors suggest about the same percentage of cases of vaginitis and cervicitis in children are non-venereal. They state that the mucous surfaces afford a favorable habitat for the higher bacteria and that organisms similar to the strains described in this report have been found in the respiratory tract. The association of these organisms with chronic inflammation of the genito-

urinary tract and their absence as primary pathogens raises the question as to their pathogenicity.

CLAUDE D. HOLMES, M.D.

Thomas B. A., and Wang I. K. Studies on the Comparative Clinical Values of Various So-Called Urinary Antiseptics. *J. Urol.*, 1929, xxi, 72.

Mercurochrome given by mouth in a dose of 300 mgm. in salol-coated pills three times daily will render the urine antiseptic in about 30 per cent of cases but causes irritation of the digestive tract.

Methyl resorcinol administered in 25 per cent olive oil in a dosage of 0.6 gm. three times a day has the same disadvantages as mercurochrome and is of much less antiseptic value.

Hexamethylenamin frequently causes indigestion and its bactericidal action is very uncertain.

The germicidal strength of methylene blue was found by the authors to be much higher than they expected, but as a rule the dye was not present in the urine in sufficient concentration to be of antiseptic value.

Pyridium administered by mouth in a dosage of 0.2 gm. three times a day proved to be a very weak antiseptic. Its action against the bacillus coli was practically nil.

Salol is of no value as a urinary antiseptic as the phenol content excreted in the urine never reaches a germicidal strength. However it seems to render the urine bland and less irritating to the inflamed urinary tract and thereby renders the patient more comfortable. In some cases, however, it causes gastric intolerance.

LOUIS KREWEIT, M.D.

Vulpus O How I Treat Tuberculosis of Bones and Joints (Wie behandle ich die Knochen Gelenk Tuberkulose?) *Orlop i Traumatol*, 1928, u 1

Vulpus describes the methods by which tuberculosis of bones and joints has been treated during the last fifteen years at the Rappenaau sanatorium under his direction. He emphasizes that as in the great majority of cases the local process is of metastatic origin general treatment is necessary. The relationships are reciprocal however, as dissemination or aggravation of the local process have a marked effect on the general condition.

The general treatment must be based on careful control of the diet. The author prefers a mixed diet with a high vegetable and fat content. He limits the quantity of meat. He has seen no favorable results from the saltless diet recommended by Gerson.

Great importance is attached to the care of the skin. In addition to massage and friction brine baths and frictions and iodine containing baths have been found beneficial. The extraordinary effectiveness of these balneotherapeutic procedures seems to depend not only upon stimulation of the skin but also upon resorption of the solutions and sensitization of the skin to light and air, the two most powerful agents in the general treatment. While the author recognizes the excellent results that have been obtained with heliotherapy, he warns against overestimation of this treatment. He always combines light therapy with other measures and resorts to operative measures when they will accomplish the desired result more quickly. Of the artificial sources of light the open carbon arc lamp, the quartz, and the sollux lamps are used at the author's sanatorium.

Iodine preparations and cod liver oil are also employed to improve the general condition. The author does not use tuberculin or the Ponndorf inoculation. For local and general treatment he employs non specific stimulation with yajren and lipatren.

The problems of the local treatment are the most difficult. They vary considerably according to the localization and nature of the tuberculous process and can be solved satisfactorily only when the medical adviser is trained in both surgery and orthopedics. In one case he may be called upon to recognize a focus close to a joint in the latent stage and extirpate it at the right time before perforation occurs. In another in the florid stage of the condition the chief indication may be as complete immobilization as possible. Neither rest in bed and extension apparatus nor orthopedic apparatus to relieve weight bearing is sufficient for this purpose. The sovereign measure to prevent complications and ankyloses is the application of a circular plaster cast. This must be done with a perfect technique. However if destructive changes have already occurred in the joint ends mobility is of more danger than value to the patient. Under such conditions it is best to produce an ankylosis in the functionally most favorable position by means of a plaster cast. When several windows are cut in the plaster cast local observation irradiation and injection therapy are possible.

In the decision regarding operative intervention the patient's general condition, age and economic status must be taken into consideration in addition to the local findings.

In cases of spondylitis the author performs the classical Albee plastic operation. His results have been very favorable. He emphasizes the necessity for rest in bed for at least six months after the operation and the subsequent relief of weight bearing by a supporting corset with a steel framework.

Vulpus has found roentgen therapy of little value in tuberculosis of bones and joints.

E. OSTEN SACKEN (Z)

Bertocchi Grafts of Fixed Patella (Innesti dell'ap parato rotuleo fissato) *Chir d organi di movimento* 1929 vii 377

Bertocchi reports twenty four experiments performed on rabbits from six to seven months of age and weighing from 1500 to 1700 gm. The grafts consisted of the patella and all of its ligamentous attachments with about 1 cm. of the ligament of the quadriceps which were removed from healthy rabbits from two to seven hours after they had been killed, washed thoroughly, placed in 90 per cent alcohol for three days and then kept in 60 per cent alcohol in hermetically sealed vessels for periods varying from five to forty eight days.

Histological examinations showed that the fixed tendon was completely revitalized within forty days by the penetration of vessels from the connective tissue of the host and the production of a fibrous marrow in the lacunae of the marrow. Bone reconstruction was then begun by osteoblasts derived from the fibroblasts of the marrow. After one hundred and twenty days reconstruction was advanced, and after two hundred and twenty days the patella was completely restored. There was then a certain superabundance of tissue as in any reconstruction. The patellar cartilage which was much more resistant to the proteolytic fluids of the host offered more resistance to the penetration of the rehabilitating cells and was therefore reconstructed more slowly, but its revitalization had begun at the end of sixty days.

The experiments show that perfect restoration of function can be brought about by the transplantation of patella fixed in alcohol and that even a complicated system of bone tendon and ligament may be reconstructed almost perfectly with the use of fixed tissues as a guide. The result is more nearly perfect than that of any other surgical method of reconstruction.

AUDREY G. MORGAN, M.D.

Lance The Insertion of a Bone Peg Taken from the Tibia in the Treatment of Tumor Albus of the Knee in the Adult (L'enchevêtrement par griffon tibial dans la tumeur blanche du genou chez l'adulte) *Bull et mém Soc nat de chir* 1929 lv 626

Since November 1926 the author has employed Lever's method of treatment in six cases of tumor albus of the knee. It consists in the insertion of a peg of bone across the joint by bony tunnelization.

well tolerated. They did not cause serious inflammation and were never expelled. Between the fifth and tenth days osteofibrous connections were formed which fixed the graft in the bone. By the fifteenth day the graft had decreased in size and was surrounded and penetrated by an osteofibrous stroma which thereafter subdivided it until it finally disappeared between the one hundred and twentieth and the one hundred and fiftieth day. At the site of the trephination there was a rapid proliferation of periosteum. The trephine opening was visible up to the one hundredth day. The marrow became normal in appearance again between the one hundred and twentieth and the one hundred and fiftieth day. The only sign of the operation then to be noted was a thickening of the cortex.

Microscopic examination showed that the fixed fat could be demonstrated by Sudan III staining up to the eightieth day. The fixed fat stimulated the host actively causing the migration of leucocytes and an abundant proliferation of the endosteum and the stroma of the marrow. After intense vascularization the endosteum and the connective tissue of the marrow gradually underwent hypertrophy and metaplasia to form a block of bone with a fibrous marrow which enclosed the residues of the fixed fat. At about the eightieth day the proliferation of bone stopped and absorption began. By the one hundred and fiftieth day only a few endosteal trabeculae remained and there was again normal fatty marrow.

The experiments show that homoplastic fixed fat is a good substitute for all of the substances that have been used previously to fill cavities in bone and that it is a good stimulant to the new formation of bone.

AUDREY G. MORGAN, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Polacco E. Experimental Homoplastic Grafts of Bone Callus (Intorno agli innesti sperimentali omoplastici di callo osseo). *Arch. ital. di chir.* 1929, XLII, 731.

The author grafted pieces of bone callus six to fifteen, eighteen and twenty one days old from fractures of the femur in rabbits into the fractured radius of other rabbits of the same breed and age. The grafts became opaque to the roentgen rays in from six to ten days. The longer the time after the operation the greater the opacity.

Histological examinations made at periods of ten, fifteen, twenty three and thirty seven days after the transplantation showed that the opacity was due to the formation of new bone. While these examinations proved at least partial vitality of the grafted tissue (which only here and there showed degeneration and disintegration after from thirty to thirty five days) they did not show definitely whether the callus had undergone a true ossification or had been merely rapidly invaded by the host tissue. However as callus undergoes development when it is grafted into soft parts, the author believes that in

these experiments it at least contributed to the bone formation. The regeneration was certainly more rapid at the site of the graft of bone callus than it is in bones that are merely resected or those into which after resection a graft of bone without periosteum is inserted. On the other hand it was slower than the regeneration occurring after the grafting of bone and periosteum, a fact demonstrating the importance of periosteum in the regeneration of bone.

AUDREY G. MORGAN, M.D.

Antonoli G. M. Homoplastic Grafts of Bone Callus into Bone (Innesti omoplastici di callo osseo nello scheletro). *Chir. d. organi di movimento* 1929, VII, 559.

Antonoli first reviews the work of other investigators which seems to show that homoplastic grafts of adult cartilage tissue do not take permanently but slowly and gradually disappear, whereas young cartilage of an embryonic character may take and proliferate more or less actively and may even form bone. He then reports experiments of his own on guinea pigs in which bone callus transplanted homoplastically into defects in fractured bone survived for forty days. Forty days was the maximum time the graft was distinctly visible.

The trabeculae of osteoid tissue, which seemed to be surrounded by a greater or less amount of granulation tissue rich in cells and newly formed vessels, survived almost completely, and in all of the histological specimens seemed to be well preserved morphologically and stained perfectly with the ordinary stains used in histological examinations. The groups of cartilage cells, either scattered in the connective tissue or attached to the walls of the osteoid trabeculae, showed greater variation in their degree of preservation. In all of the stages of the experiments perfectly preserved cells could be seen beside other groups that were in more or less advanced stages of dissolution and absorption. In only one animal was the cartilage almost completely necrotic. In the others more of the cartilage was well preserved than was undergoing degeneration. This suggests that the islands of necrosis were due partly to the trauma of the operation and partly to the inflammatory reaction of the host's tissues, which affected particularly the peripheral part of the graft. The most intense changes were seen at the surface of the grafts. The degree of necrosis was greater the more intense the inflammatory reaction.

No mitoses or signs of proliferation on the part of the cartilage cells were seen in any of the animals.

On the whole the author's experiments confirm the finding of Lubarsch that the fate of the graft depends partly on the condition of nutrition of the host tissues but also to a greater degree on the youth of the graft and its capacity for regeneration. Antonoli concludes that homoplastic grafts of bone callus show a marked tendency to take and survive as most of the cells appear to be well preserved as regards form and staining capacity after a period of forty days.

AUDREY G. MORGAN, M.D.

FRACTURES AND DISLOCATIONS

Gianturco, G. Operative and Non Operative Treatment of Fracture of the Surgical Neck of the Humerus (Contributo al trattamento eruento ed inerte delle fratture del collo chirurgico dell'omero) *Chir d'organi di movimento*, 1929 vii 447

From 132 cases of fracture of the surgical neck of the humerus in which reduction was effected under general or local anesthesia and fluoroscopic control and fixation was obtained with traction apparatus or plaster the author concludes that non operative treatment is best if it is possible. When it is not possible he does not hesitate to operate. In 97 per cent of his cases there has been healing without perceptible displacement.

Fracture of the surgical neck of the humerus often ends in vicious consolidation and more or less limitation of function. It has generally been immobilized in quite marked lateral adduction and external rotation and often even in elevation. The author regards this method as wrong and reports 5 cases in support of his opinion. In 2 of the cases the fracture was above, and in 3 it was below the tuberosity. In the first and second cases it was comminuted with detachment of the greater tuberosity. While the fragments of the tuberosity were pulled up by the muscles the head was not greatly displaced with reference to the diaphysis. In both of these cases the arm was immobilized in a special apparatus which was designed by the author and is shown in an illustration. In one it was immobilized in abduction to 60 degrees and in the other in abduction to 40 degrees and quite marked external rotation. Although the patients were old and it was necessary to continue the immobilization for a relatively long time the functional result was perfect.

In the 3 other cases there was quite marked displacement. In 1 a case of petrochanteric fracture

or, more properly speaking, detachment of the epiphysis complicated by fracture of the surgical neck the proximal fragment was in abduction and external rotation with its apex forward and the diaphyseal fragment was displaced upward and forward. Two attempts at non operative reduction were unsuccessful. In an anteroposterior roentgenogram the position appeared to be perfect, but a lateral picture showed that the diaphyseal fragment was in front of the proximal fragment. Operation and wiring were necessary. The reduction was maintained best by abduction to 60 degrees, external rotation of 20 degrees and anterior position of the elbow. In any position displacement of the fragments is easy. In Taddei's position of abduction to 90 degrees and external rotation to 180 degrees the external rotation is excessive and in Whitman's position the elevation tends to bring about displacement.

In the author's fourth case that of a young patient with a subtuberosity fracture the proximal fragment was neither abducted nor rotated outward. The distal fragment was adducted and not elevated. The fracture was reduced non operatively and the arm put up in a plaster cast in abduction of 30 degrees, indifferent rotation and slight anterior position of the elbow. A perfect result was obtained.

In the fifth case that of an adult with a subtuberosity fracture the upper fragment was not abducted but was rotated slightly inward and its apex looked slightly forward. The distal fragment showed anterior position and great adduction in a subcoracoid position. Complete reduction was impossible without operation. During the operation it was found that the best position to maintain reduction was abduction of 30 degrees, indifferent rotation and slight anterior position of the elbow. In this case also the fragments were easily displaced in horizontal abduction and in Whitman's position of elevation. A good result was obtained. AUDREY G. MORGAN, M.D.

without resection. In three of the cases the disease which had been present in childhood had healed with incomplete ankylosis and the patient suffered at times of pain which were probably due to the slight movement. The object of the operation was to obtain solid bony ankylosis. In the three other cases the disease was still active. In one it was a recurrence of an old lesion. In another, the lesion was acute and very painful. The patient had pulmonary tuberculosis and his general condition was poor. In the third case a fistula was present and the local disease though attenuated, had not been entirely extinguished. In three cases the object of treatment was to obtain complete immobilization with the rapid creation of an ankylosis that would allow the patient to get about without compromising the progressive cure of the osteo-articular lesions.

In the first group, solid bony ankylosis was obtained. Roentgenograms made fourteen months later showed that the bone peg was still present and that ossification had taken place around it in the interarticular space. Of the patients with active disease at the time of operation one was treated recently, one could not be traced, and in one the portion of the bone peg that crossed the interarticular space had become absorbed and there was slight motion in the joint. In all of the cases there was immediate relief of the pain. Iance believes that in this result the bone trephination played a rôle. He concludes that it is impossible to attribute the result wholly to immobilization since, from the mechanical point of view, complete immobilization could not be obtained with the single peg employed and the patients were walking on the fifteenth day. The joint swelling decreased slowly. In the first group of cases all of the signs of inflammation disappeared in a few weeks. The fistula in one of the cases of active disease which had been present for six months healed permanently in seventeen days. In all of the five cases in which a late X-ray examination was made the roentgenogram showed a reconstitution of the ends of the joints that was entirely beyond the normal in rapidity and extent.

FLORENCE A. CARPENTER

Putti V. The Treatment of Congenital Absence of the Tibia or Fibula (*Cura dell' assenza congenita della tibia o del perone*). *Chir d'organi di movimento* 1929, vii 513

Whether there is total or partial absence of the tibia or absence of the fibula the leg is always shortened. The treatment advocated by the author which has been used in twelve cases of such defects consists essentially in bringing the three parts of the skeleton of the lower limb into alignment, establishing a solid column for support and lengthening the leg as much as possible. If the tibia is lacking the fibula is substituted for it. At the top it is articulated with or fixed to the femur and below, when there is no tibial epiphysis, it is grafted to the tarsus. The foot is extended on the leg and used to lengthen the limb. If the fibula is lacking the operation consists only in utilizing the foot in this way to lengthen the leg.

As the condition is congenital early operation is important. It may be performed in stages. The author establishes alignment of the thigh and leg first and then obtains fusion between the leg and foot. The two operations may be separated by a long interval. In some cases it may be necessary to correct lateral deviation of the fore part of the foot and flexion of the knee. The best remedy for the latter if the angle of flexion is not more than 25 degrees is supracondylar osteotomy. When the flexion is greater than 25 degrees plastic elongation of the flexors and capsulotomy are indicated. Adduction or abduction of the fore part of the foot may be overcome by plaster casts. When the foot is used to lengthen the leg the weight must rest on the metatarsals or toes. If the toes are to be utilized for weight bearing they may be brought into a right angle with the metatarsals by means of plaster casts. In two of the author's cases the toes offered so much resistance to angular flexion that subcutaneous tenotomy of the flexors was necessary. After the leg has been brought into alignment and lengthened, plaster may be used as a temporary support. For permanent support celluloid or aluminum may be employed.

In the author's eight cases in which the treatment has been completed the patients are able to walk firmly and without pain. Under the stimulus of function the fibula increases to the size of the tibia. The synostoses between the leg and tarsus and the tibia and femur are solid. In one of the author's cases ankylosis developed at the knee but in the others there is a fair amount of movement at the knee.

AUDREY G. MORGAN, M.D.

Odasso A. Temporary Dislocation of the Joint Heads in the Treatment of Serious Sepsis of the Joint Between the Tibia and Astragalus (*Le dislocazioni temporanee dei capi articolari nella cura dei più gravi processi settici dell'articolazione tibio-astragalea*). *Chir d'organi di movimento* 1929, vi 473

Temporary arial dislocation with exteriorization of the heads of the joint was one of the methods of treating septic infections of joints used during the War. The author reports eight cases in which it gave excellent results. In cases of fracture dislocation and wounds of the ankle complicated by purulent tibiotarsal arthritis and serious local and general sepsis it is indicated to save the limb or possibly even the patient's life. It may be employed also in cases of violent trauma with fracture of the bone, laceration of the soft parts and infection of the wound which cannot be influenced by the usual mechanical and chemical treatment. In such cases it prevents the sacrifice of normal soft parts and the occurrence of local suppuration and general sepsis.

The dislocation should be very free and should be done early. Reduction to the correct position after the treatment must be performed with care. Methodical after treatment is important. When the procedure is correctly carried out the functional results are good.

AUDREY G. MORGAN, M.D.

FRACTURES AND DISLOCATIONS

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SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Del Pino P and Masciotra R L. Ligation of the Inferior Vena Cava Because of an Accident During Operation (Ligadura de la vena cava inferior accidente operatorio) *Semana med* 1929 xxxvi 1632

The patient whose case is reported was a woman in the seventh month of pregnancy who was admitted to the hospital with a hydronephrosis of the right kidney the size of an adult's head. In the course of the operation for this condition the inferior vena cava was injured and it was necessary to resect a segment of it 3 cm in length. The next day a premature fetus was delivered. The child died after twelve hours. Except for slight phlebitis recovery was uneventful and the patient was discharged well one month after her admission to the hospital.

This case shows that it is safe to ligate or resect the inferior vena cava. A number of other cases with a favorable outcome are cited from the literature. Ligation can be performed only below the renal veins. If it is done elsewhere the renal circulation is excluded and anuria results. In the authors' case in which the vena cava was ligated and resected below the renal vein there was no change in the blood pressure of the legs or in the urine. The only complication attributable to the ligation was the abortion. **AUDREY G. MORGAN, M.D.**

Brooks B. Surgical Applications of Therapeutic Venous Obstruction. *Arch Surg* 1919 xiv 1

When in the course of the operation for the cure of an arteriovenous fistula it appears evident after ligation of the artery that the complexity of the condition present will prevent closure of the fistulous opening or the surgeon is uncertain of the success of his attempts ligation of the vein proximal to the fistula is imperative. When the arteriovenous fistula has existed for a relatively short period and it is necessary to obliterate the artery in order to close the fistula ligation of the vein is preferable in most instances and is always indicated if the artery involved is the popliteal or axillary artery. When the arteriovenous fistula has been present for a long time the collateral arterial circulation is so abundant that even though it is necessary to obliterate the main artery in the closure of the fistula ligation of the vein is unnecessary and even contra-indicated. While there is a certain amount of justification for the view that ligation of the vein is always preferable in the treatment of arteriovenous fistula because of the danger of pulmonary embolism from thrombosis at the site of repair of the fistulous opening in the vein the author does not accept this view.

In progressive arterial degenerative disease associated with arterial obstruction, ligation of the vein is at most a palliative measure and its beneficial effects only occasionally justify its employment.

Therapeutic venous obstruction finds its most valuable application in cases of sudden arterial occlusion. When as the result of trauma or in the course of an operation it becomes necessary to ligate a large artery simultaneous ligation of the concomitant vein is always to be considered. When the popliteal or axillary artery is ligated ligation of the like named vein is definitely indicated. In instances of ligation of the femoral or brachial arteries simultaneous ligation of the vein makes little or no difference. According to the authors experience ligation of the common iliac artery is not an indication for ligation of the common iliac vein.

Simultaneous ligation of the vein is not to be considered the preferable procedure in all arterial ligations. It is to be done only in cases in which without ligation of the vein gangrene is to be expected and in such cases the probable immediate beneficial effects preventing gangrene must be balanced with the possible remote ill effects of chronic venous stasis. **SIMUEL HARR, M.D.**

Dos Santos Lamas and Caldas. Arteriography of the Extremities and of the Aorta and its Abdominal Branches (L'artériographie des membres, de l'aorte et de ses branches abdominales). *Bull et mem Soc nat de chir* 1929 lv 537

The authors have made extensive researches with arteriography in the living human being. They introduce sodium iodide in 25 per cent solution into the arteries of the extremities and in 100 per cent solution into the aorta. The vessel is then compressed until the roentgenogram is taken. The branches of the humeral artery have been rendered visible for fifteen minutes while a series of roentgenograms was made. Maximal clearness requires a good concentration of sodium iodide and speed in the injection.

By this method studies have been made of the circulation in the extremities in gangrene, osteoarthritis, osteomyelitis, bone syphilis, Volkmann's paralysis, sarcoma of the soft parts and bone, and popliteal aneurism. In discussing their findings the authors call attention to the contrast between the richness of the circulation in osteo-articular tuberculosis of the knee and the poverty of the circulation in syphilis, the obstruction of the humeral artery in Volkmann's paralysis which extends as far as the bifurcation, the richness of the new vascularization in sarcoma of the thigh, the special circulatory de-

velopment in sarcoma of the humerus which is entirely different from that seen in osteitis, and the disappearance of the regional arteries in a case of suppurative osteo arthritis of the wrist which showed that the accompanying necrosis of the carpal bone was not entirely of infectious origin but due also to ischemia.

For injections of a 100 per cent solution of sodium iodide general anesthesia is necessary. For injections of the aorta, the site and the dose are selected in accordance with the vascular territory which is to be made visible. The dose used by the authors varies from 10 to 35 c cm, and is well tolerated.

In one of the cases studied an ovarian cyst was differentiated from a myoma by the absence of vascularization of the tumor. The injection was made at the level of the first lumbar vertebra. In a case of tuberculosis of the left kidney the renal arteries were rendered visible and the roentgenogram taken before nephrectomy was similar to that made of the kidney after it had been removed and filled with sodium iodide. The picture was characterized by circulatory impoverishment.

The article is illustrated by five arteriograms.

GOSSET, who presented the report before the Society said that he would be unwilling to employ the method in the abdomen.

LECLERC, who discussed the report, warned against such strong solutions of sodium iodide. He holds that the method is altogether too dangerous for use in vivo.

FLORENCE A. CARPENTER

TORRACA L. Is Ligation of an Artery Irreversible?
(Rappresenta la legatura di un'arteria un fatto irreparabile?) *Arch ital di chir* 1920 xxii 693

In nineteen experiments the carotid and femoral arteries of dogs were ligated and the ligatures left on for from eighteen to one hundred and twenty hours. In thirteen cases the circulation was re-established when the ligatures were removed and on examination after from two to sixty days the vessels were found perfectly permeable and the lesion produced by the ligature was undergoing healing with out any trace of blood clots. In six cases the artery was thrombosed. Of nine experiments in which the ligatures were left on for from eighteen to seventy two hours there was thrombotic occlusion in only one (11.1 per cent). In the others the circulation was re-established. Of ten experiments in which the ligatures were left on for from ninety six to one hundred and twenty hours thrombosis occurred in five (50 per cent). In five the lumina of the vessels were restored. The probability of restoration of the circulation was therefore inversely proportional to the time the ligature was left on.

Thrombosis always occurred if the vessels were ligated with large or double threads. Therefore the degree of the lesion of the wall of the artery seems to be of considerable importance.

In all except one of the animals the operative wounds healed by first intention. In one animal which died from infection of the wound one of the

carotids was found permeable and the other thrombosed. In another animal one femoral artery was found permeable and the other occluded, though both wounds had healed by first intention. Therefore infection of the tissues around the artery does not seem to be necessary to the production of thrombosis of the artery.

As the arteries containing thrombi were always found obliterated and the arteries that remained permeable showed no trace of a thrombus it seems evident that when the blood did not clot the simple adhesion of the surfaces injured by the ligature was not sufficiently firm to resist the pressure of the blood current and prevent restoration of the permeability of the vessel when the ligature was removed.

ANDREW G. MORGAN, M.D.

ZELTIN A. Investigations Regarding Vascular Stenosis Following Circular Arterial Suture and Venous Autotransplantation (Untersuchungen ueber Gefaessverengung bei zirkulaerer Arteriennaht und Venenautotransplantation) *Arch klin Chir* 1920 cliv, 150

To determine the immediate and late effects of narrowing of the lumina of main arterial trunks on the circulatory conditions in the regions supplied by those vessels—a problem of importance particularly in vascular surgery—the author studied the immediate effect of occluding the lumina of main vessels by degrees and also the effect of chronic stenosis of the vessels. The studies were made on the hind legs of thirty six dogs with graphic measurement of the blood pressure at the site of branching of the vessels by means of the spring manometer of Fick. The mean pressure and systolic pressure, the most important characteristics of the circulation, were given chief consideration.

With regard to the immediate effect of gradual narrowing of the lumen of a main vessel it was found that even when considerable narrowing was produced there was at first scarcely any detectable variation in either the mean pressure or the force of the pulse beat. With further narrowing (up to one fourth of the original lumen) and a tolerant mean pressure, the amplitude of the beat was rapidly depressed. Only after narrowing beyond three fourths of the original lumen was there an extremely rapid lowering of both pressure readings. When the stenosis was complete the pressure attained a level corresponding to that of collateral vessels. The collateral flow component evidently had little or no favorable effect on the changes in the pressure within the branch system of the corresponding main flow component. The high tolerance of the mean pressure and the pressure amplitude as compared with great variations in the lumen of the main arterial vessel depended entirely on the main flow component. This fact was clearly demonstrated in collateral free extremities produced under special experimental conditions by the method of Bier and Bogoras.

The late effects of chronic stenosis of the arterial main vessel on the circulation in the area supplied

were studied in experiments in which observations were made after successful circular suture of the vessel and circular suture producing stenosis. The diagrams show that, in contrast to the almost complete restoration of the circulation following successful circular suture stenosis of the vessel from unsuccessful suture led to weakening of the pulse beat although the mean pressure was maintained or even elevated. Nevertheless the experiments demonstrated that the narrowed main channel of arterial circulation to an extremity even when the stenosis is marked, is more effective in maintaining the blood circulation than are the collateral vessels alone, and that the diminished flow following stenosis from circular suture of arterial trunk vessels may be definitely improved by certain secondary processes if by the use of a good technique thrombosis is prevented.

The clinical importance of this fact was shown in the case of a farm laborer thirty six years of age who fourteen months after a gunshot injury of the right thigh came to operation with cardiac symptoms and all of the signs of an arteriovenous aneurism of the femoral vessels with involvement of several branches. After resection of the entire cicatrized aneurismal portion of both vessels and replacement of the 20-cm defect in the artery by transplantation from the major saphenous vein of the same leg in which procedure the peripheral circulatory suture became somewhat narrowed, the cardiac symptoms rapidly subsided and good circulation and function of the limb were restored. The pulse in the dorsalis pedis artery, which was very weak immediately after the operation began to improve on the second day and after a week was strong and full. However after the fourth week it again became weaker, and after six weeks it was very weak at times being scarcely perceptible. Subsequently it did not improve again but the patient was discharged two and one half months after the operation without the slightest disturbance in the extremity operated upon.

Aside from the form of the gunshot injury, the distal effect of the arteriovenous aneurism upon the heart, and the tolerance of the vein to autoplasty, this case is of importance as indicating that also in cases of gradual and almost complete obstruction to the lumen of an artery from slowly advancing thrombosis at the site of the suture line the operative correction of the arterial defect will maintain the circulation of the extremity until an adequate collateral circulation develops and that even after the development of a sufficient collateral flow the main current which has been re established by the arterial suture will continue to support the arterial circulation of the limb as long as the trunk is still patent. In the case reported, the restitution of the extremity operated upon could scarcely have been brought about in so short a time by the collateral flow alone.

Zeithin therefore concludes that even when secondary suture stenosis results, the autoplasmic transplantation of a vein to correct a large arterial defect is an effective procedure which not infrequently will save the limb.

R. SULLER (2)

Petit Dutailhils D. A Method to Prevent Cerebral Complications in Operation for Aneurism of the Carotid Bifurcation. Resection of the Pouch Combined with End-to-End Anastomosis of the External Carotid to the Internal Carotid (*La résection de la poche combinée à l'anastomose bout à bout de la carotide externe à la carotide interne: méthode de sécurité dans la cure des anévrysmes de la fourche carotidienne*). *J de chir* 1929 xxxix 609.

Resection of the pouch is beyond question the sole treatment applicable to aneurisms of the carotid bifurcation but the statistics show clearly the gravity of resection when the aneurism is at this site. As regards the circulation in the brain the patient subjected to such a resection is in the same condition as the patient whose internal carotid has been ligated.

The author describes with drawings and diagrams, an operation which he performed in a case he reported previously. Its main indication is young aneurisms of small volume above which the temporal pulse does not disappear completely on compression of the common carotid. An incision from 12 to 15 cm in length is made parallel with the sternomastoid muscle and the aneurism and its vascular relations are widely exposed. The internal carotid is first disengaged very carefully and ligated with silk close to the aneurismal pouch. About 2 cm above this point a small clamp is placed. The external carotid is then treated in the same manner.

To uncover the pouch completely the thyrohyoid-facial vein is divided between two ligatures. The digastric muscle is also divided if the aneurism is in a high position. It is advisable to denude the common carotid completely at a distance from the aneurism and to pass a ligature around the vessel at this point ready to be drawn up and tied in case one of the other ligatures gives way in the course of the operation. The two carotids are sectioned as close as possible to the upper pole of the pouch.

Before the anastomosis is undertaken, it is essential to ascertain the comparative importance of the circulation in the two vessels. This is done by loosening the clamp a little first on one and then on the other. If the distal end of the internal carotid bleeds abundantly there is no object in doing the anastomosis and ligation of the two vessels is sufficient. The anastomosis is indicated only if the flow in the internal carotid appears to be weaker than that in the external carotid. As side to side anastomosis presents about the same technical difficulties as end to end anastomosis and may favor intravascular coagulation the author favors end to end anastomosis. The details of the anastomosis are shown by drawings. When the anastomosis is complete the pulsation in both the internal and external carotids is noted. The ablation of the pouch follows care being taken not to endanger the pneumogastric and cardiac nerves if they are encountered and the trunk of the sympathetic, which varies in its relation to the pouch. The superior thyroid, which usually branches off at the level of the sac is ligated. The

digesta is sutured and the wound closed in layers, with or without drainage

FLORENCE A. CARPENTER

BLOOD, TRANSFUSION

Bancroft, F. W., Kugelmass, J. N. and Stanley, Brown M. The Evaluation of Blood Clotting Factors in Surgical Diseases *Ann Surg* 1929 xc 161

The studies reported were undertaken to determine the reaction of the blood clotting factors to surgical procedures and surgical diseases such as thrombosis and embolism and certain conditions characterized by bleeding.

The methods by which the substances involved in blood coagulation—prothrombin, fibrinogen, anti-thrombin, and platelets—and the degree of platelet lysis were determined are described. The index of blood clotting function was calculated from the composition of the clotting components. The authors give a classification of diseases in which the blood clotting function is altered.

Eleven proved cases of thrombosis, phlebitis or embolism were studied. All showed a high clotting index and a low antithrombin value. A high clotting index was presented also by a small percentage of postoperative cases in which the occurrence of thrombosis or embolism was not proved.

Experiments on animals have demonstrated an increase in the clotting factors following postoperative infection and gangrene and a smaller increase following ether anesthesia.

Pre-tonsillectomy studies were made on three groups of patients: (1) those with deficient clotting; (2) those with normal clotting previously suspected to be bleeders; and (3) nutritional bleeders treated by diet.

The prenatal measures for the prevention of hemorrhagic disease in the newborn are described.

Analyses of diets to increase and decrease the clotting function are given. Experiments on animals have shown that the tendencies to bleed and clot are definitely influenced by diet.

HOWARD A. MCKNIGHT, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Blair V P and Brown J B *The Use and Uses of Large Split Skin Grafts of Intermediate Thickness Surg Gynec & Obst 1929 xlx 82*

A full thickness graft is appropriate for a freshly made clean raw surface where substantial protection maximal mobility, minimal subsequent contraction and the most natural appearance are essential. This type of graft is indicated for such situations as the front of the neck, certain parts of the face, the flexor surface of joints that can be flexed and webbed fingers and for the release of arms fixed to the trunk following burns.

For fresh granulating surfaces, freshened scar surfaces that will resist subsequent contraction the authors choose thinner grafts (unless appearance and the demands of function contra-indicate their use) because of their comparative simplicity and their greater certainty of take. On the back of the hand except over the knuckles and on the subcutaneous muscles of the face the orbicularis oris and orbicularis palpebrarum a split graft of some thickness is best.

The Ollier Thiersch graft is supposed to include little more than the epithelial layer and will heal in practically all cases.

The thinner grafts require less time and skill than full thickness grafts. When a thin graft is used the raw area heals in about ten days whereas when a full thickness graft is employed postoperative care is usually necessary for three weeks.

A thin graft, if inaptly applied, may not give sufficient protection to a healing surface or because of its thinness may not correct the inequalities of the underlying surface. If it is placed on a raw surface with a movable base and movable edges such as the subcutaneous tissue of the neck it may subsequently contract as much as 60 per cent without loss of epithelium. The contraction is due to the layer of scar tissue below.

Great care is necessary in the preparation of the areas to be grafted. A plastic operation is contra-indicated by any acute purulent skin eruption. A pimple even on a remote part of the body means lowered resistance of the host. All scurf and scales should be removed the day before the operation.

The authors apply picric acid or 1 per cent mercurchrome on all surfaces that will not be exposed in the pose, they use iodine.

In the preparation of bare and granulating areas it is important to apply damp and absorbent dressings. These must not be allowed to dry in place and must be changed sufficiently often. They must be applied firmly and comfortably.

Thin or moderately thick skin grafts grow readily on a clean granulating surface but the authors have found that they will do much better if the granulations are sliced (not scraped) down to the underlying yellow scar base and the whole area is covered with large grafts put on with proper tension and pressure.

As a rule the authors obtain the grafts from the inner and outer surfaces of the upper half or two-thirds of the buttocks or the front of the abdomen. The graft is cut large enough to cover the area and to extend beyond its edges. It is cut with a long razor ground knife. The skin is held taut and flat by traction pressure of small straight edged pads above and below the knife. At times especially in the cases of thin patients with flabby muscles a suction retractor is also employed.

The graft is applied as soon as the bed is prepared. It is put on to overlap the borders of the defect. If more than one graft is necessary their borders overlap. Grafts are held in place under normal lateral tension by basting or whipping stitches of horsehair. After a graft has been sutured holes are cut through it to insure the drainage of blood serum.

The dressing of such a wound is very important. The authors apply two layers of vaseline gauze next to the graft and under the pad. The vaseline is made with 3 per cent xeroform. On uneven surfaces large flat damp marine sponges which do not touch the bare skin are applied evenly over the gauze pad.

The first dressing is allowed to remain for from four to ten days. Serous accumulations and clot formations are evacuated.

In certain areas as within the mouth on the eyelid and on the lip the authors use a graft wrapped around a wax form with the raw surface outward. Lateral tension is obtained by the friction of the graft over the wax. In turn the tissues to be grafted are sutured under tension around the graft covered form which furnishes the desired pressure.

The donor area is dressed by the application of six smooth flat layers of vaseline xeroform gauze covered with a flat gauze pad and strapped in place with adhesive. At the end of the ninth day the original dressing is lifted off or is soaked loose by a wet pack. If the graft was not cut too deep the area is usually found to be healed. EARLE I GREENE M D

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Wittmoth P *Aseptic Necrosis Caused by an Indefinite Pencil (Nécrose aseptique par le crayon d'anthracine) Presse Méd Paris 1929 xxxvii 700 701*

The middle portion of the internal border of the foot of a thirteen year old girl was pierced by the point of an indelible pencil when the child was walk-

ing barefoot. The point of the pencil broke off and remained in the flesh. There was slight bleeding but as the wound appeared to heal normally no attention was paid to it until ten days later when swelling and bluish discoloration of the skin appeared. Under treatment with moist dressings and hot local baths the overlying skin ruptured and a dark violet blue fluid escaped. This occurred three times, the tegument reforming on each occasion. Then, for the first time the child complained of pain in the swollen area. Six weeks after the accident, the foot presented ulceration over an area measuring 5 by 4 cm. Surrounding the ulcer there was a narrow zone of mortified yellow skin detached from the underlying structures. The base of the ulcer was composed of an anterior layer which was red, and a more extensive layer which was violet and contained numerous sometimes confluent dark blue islands. A dark violet fluid oozed from the lesion.

Fortunately the accident with the aniline pencil was known. The entire ulcerated area including the zone of yellow skin around it was excised down to the aponeurotic layers. It was impossible to unite the lips of the operative wound. Healing occurred by second intention. At no time were any fragments of the aniline pencil point extruded. They were apparently entirely dissolved.

The author states that the caustic and toxic properties of the material used for indelible pencils should be made known to the general practitioner and the public. The treatment of injuries from such pencils is immediate removal of the fragment that has penetrated the skin with excision of the track it has made through the tissues. In the author's case the action of the substance was purely local but cases of general intoxication have been reported. However, the aseptic or chemical necrosis is the result chiefly to be feared. Jerusalem reported two cases in which amputation of a finger was necessary.

FLORENCE A. CARPENTER

Hogenauer F. The Presence of Virulent Tetanus Bacilli in a Case of Cured Tetanus (Ueber das Vorkommen virulenter Tetanusbacillen bei einem geheilten Tetanusfall). *Wien med Wchnschr* 1929 1: 445

Trauma may cause a recurrence of tetanic seizures seven years or longer after the primary attack. This is usually the case in recurrences. A few cases are known also in which following a cured attack of tetanus virulent tetanus bacilli were found on foreign bodies removed at a later date the bacilli having remained in the body without causing symptoms for a long time.

The author reports a case of cured tetanus in which when a splinter of wood was removed from the forearm two and one half months later, virulent tetanus bacilli were found upon it.

The phenomenon may possibly be explained on the basis of an acquired active or a passive immunity produced by large doses of serum. However, the active immunity, i.e. the production of antitoxins in

the organism, is so slight that it is not lasting. This is proved by the many recurrences of tetanus. Recovery from an attack by no means protects from a new attack. The injected antitoxin is excreted rapidly in proportion to the dose given. It is improbable its effectiveness lasts for two months. However the phenomenon under discussion cannot be explained in this manner. It depends upon whether the tetanus bacilli are able to produce sufficient toxin or the wound and cicatricial conditions permit resorption. A secreting surface of granulating tissue (a dense scar) may prevent resorption. This explains how the tetanus may break out again following operative interference. It is possible that the tetanus bacilli present in the original wound may for a long period or at least temporarily, secrete very little or no toxin.

Two factors are of importance for infection the wound conditions, which favor diffusion of the toxin formed and the resistance of the organism.

In the cases of carriers of tetanus bacilli the removal of foreign bodies is to be attempted only after thorough serum prophylaxis.

HELMUT SCHMIDT (Z)

ANÆSTHESIA

Davies H W. Therapeutic Uses of Carbonic Acid. *Edinburgh M J* 1929 xxxvi 385

Formerly regarded as merely a waste product of metabolism carbonic acid is now known to play an important rôle in regulation of respiration, control of the circulation of the blood and maintenance of the normal acid base balance of the blood and tissues.

The safest and most efficacious respiratory stimulant for therapeutic purposes is carbon dioxide. The addition of a small amount to the inspired air will increase the resting respiratory minute volume to double, treble or even more. The addition of 5 per cent of carbon dioxide to the inspired air will lower the oxygen percentage. With this amount of carbon dioxide there is no appreciable increase in oxygen consumption and as the result of the greatly increased lung ventilation the percentage of oxygen in the alveolar air and hence oxygenation of the arterial blood is actually increased.

The value of carbon dioxide as an adjuvant in ether anaesthesia is recognized. By the addition of carbon dioxide to the inspired air the anaesthetist is able to control the amount of pulmonary ventilation. By means of the increased ventilation the absorption and elimination of ether is accelerated.

In a series of cases in which carbon dioxide was used during the induction of ether anaesthesia and throughout the operation, the incidence of severe postoperative vomiting was greatly diminished whereas in two series of cases in which little or no carbon dioxide was used there was considerable severe vomiting.

In carbon monoxide poisoning, in which there is a marked reduction in the carbon dioxide content

of the blood, the impairment of the circulation and alkalosis can be relieved by the inhalation of air containing 5 per cent carbon dioxide

In high altitudes there is no impediment to the removal of carbon dioxide. Alkalosis therefore results. Carbon dioxide is very beneficial in this condition.

Carbon dioxide is of value also in collapse and shock following prolonged operations and in heat stroke.

LARLE I GREENE M.D.

Kelly F. A. The Clinical Aspects of Controllable Spinal Anaesthesia. *Brit M J* 1929 ii 187

The author reminds us that the objections to spinal anaesthesia have been overcome by the addition of gladin to the solution to render it more viscous and thereby prolong the anaesthesia by tilting of the table to control the height or extent of the anaesthesia, and by the administration of ephedrin before the spinal injection to control the severe drop in the blood pressure. If the anaesthetizing agent is allowed to reach as high as the second dorsal segment, all of the vasomotor nerves will be paralyzed and a severe fall in the blood pressure will

result because all of the vasomotor nerves controlling the blood vessels are given off from the second dorsal to the third lumbar segments.

The author uses the tiltometer devised by Pitkin to control the extent of the anaesthesia. For low anaesthesia, half an ampoule of spinocain is injected into the fourth lumbar interspace and the patient is tipped immediately into at least a 15 degree Trendelenburg position. The resulting anaesthesia is ideal for operations on the vagina and rectum. For high anaesthesia for such operations as those on the gall bladder, the injection is made in the first lumbar interspace after the spinocain has been mixed with about 6 c cm of spinal fluid. The resulting anaesthesia extends well above the costal arch and when it is complete the patient is immediately placed in the Trendelenburg position to stop its upward movement.

The author finds no contra indications to lumbar anaesthesia except in persistent thymus and an absolutely moribund state. He relieves the post operative headache by giving a retention enema of 6 oz of a 50 per cent magnesium sulphate solution.

M HERBERT BARKER M.D.

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Brams J., and Darnbacher L. The Effect of the X Rays on the Gall Bladder The Experimental Production of an X Ray Cholecystitis *Radiology*, 1929 xiii 103

In reviewing the literature, the authors were unable to find any reference to a destructive action on the gall bladder by irradiation. To determine the possibility of producing a roentgen cholecystitis they exposed a series of dogs to various dosages of roentgen rays by a technique described in detail. The findings made at necropsy led to the following conclusions:

1. A definite acute and chronic cholecystitis can be experimentally produced in dogs with dosages of roentgen rays that are within the range of those used for therapeutic purposes.

2. The changes produced are destructive. They consist of hemorrhage, inflammatory edema, round cell infiltration, fibrous tissue hyperplasia, and in some instances necrosis of the epithelium and resemble the type of cholecystitis produced by chemical means.

3. The relative lack of injury to the exposed portion of the duodenal and pyloric mucosa indicates that the gall bladder epithelium is comparatively more sensitive to roentgen ray exposure than the other organs in apposition to it.

4. The possibility of injury to the gall bladder from deep therapy in the region of the right upper quadrant of the abdomen must be borne in mind.

ADOLPH HAARFUNG M.D.

RADIUM

Russ S. and Scott G. M. Radium and Radon Tubes *Brit J Radiol* 1929 ii 390

The authors report research undertaken to determine how much it is possible to reduce the concentration of radium and radon tubes for embedding without interfering with their ability to cause the disappearance of malignant growths. Most of the experiments were performed on Jensen's rat sarcoma. Platinum tubes of various sizes containing either radium or radon were inserted into tumors that were growing rapidly. Several series of experiments were carried out with tubes varying in length from 0.7 to 4 cm. and with an active length varying from 0.5 to 3 cm. In general the tubes were inserted lengthwise in the central portions of tumors from 12 to 18 mm. in length and from 10 to 17 mm. in width. The wall thickness of the tubes was usually 0.3 mm. but in a few instances it was 0.4 mm.

The tubes inhibited the growth of the tumors and if the dosage was large enough they stopped it com-

pletely. As the intensity of the dosage was reduced the lethal range of action decreased appreciably. A short seed with an active length of 5 mm. in a screen 7 mm. long with a wall thickness of 0.3 mm. of platinum and a concentration of 4 mc. per centimeter of active length was certain to cause the disappearance of a tumor measuring 10 by 10 mm. Such seeds were left in place for ten days. When longer tubes were used the intensity of irradiation per centimeter could be very much reduced without interfering with the lethal effect. A tumor measuring 14 by 12 mm. was destroyed with a concentration of only 0.72 mgm. of radium element per linear centimeter, which is less than a quarter of the concentration required in tubes with a length of 0.5 mm.

The tumors continued to grow for a few days after the tubes were inserted. The rapidity with which they disappeared varied enormously.

It was found that a tumor which had been irradiated for the length of time necessary to cause its disappearance would grow if small pieces were taken from its edges and inoculated into young rats. Growth occurred in a large percentage of such transplants although if the tumor had been left in the original animal it would have disappeared. The transplants were slow to begin growing and grew slowly.

The effect of irradiation of the surrounding normal tissues in inhibiting tumor growth is difficult to estimate but as previous experiments showed that tumor cells grow with less vigor in irradiated tissues it is suggested that irradiation of normal tissues plays some part in the disappearance of tumors.

A. JAMES LARSEN M.D.

Lacassagne A. The Importance of Filtration and the Superiority of Pure Gamma Radiation in the Radiotherapy of Malignant Tumors *Radiology* 1929 xiii 95

The author reviews the development of the use of the ultra penetrating gamma rays as opposed to the composite rays. Pure gamma rays emerge from a 0.5 mm. screen of platinum and composite rays from screens of lesser thickness. Composite rays cause more necrosis of all tissues. Pure gamma rays cause only minimal necrosis of normal tissue and have a more selective action on cancer cells.

The first exponent of the use of purified gamma rays was Dominici. Dominici said: 'The alpha rays do not penetrate deep tumors, the beta rays barely reach them and are absorbed in the superficial layers, while the gamma rays pass completely through neoplastic tissue and even beyond it. The alpha and beta rays are therefore useless and dangerous.'

Studies of the tissue reactions immediately surrounding radon units which were undertaken at the

Radium Institute of Paris established the following facts

1 The diameter of the zone of necrosis produced in any tissue by an unfiltered radon unit is not constant. It increases with the intensity of the irradiation to a certain fixed limit.

2 The diameter of the area of necrosis occurring around a filtered radon unit is smaller the greater the filtration. Light millicuries in glass produce an area of necrosis with a radius of about 6 mm. When a filter of 0.15 mm of platinum is used the radius of the area of necrosis is only 4 mm, and when a filter of 0.3 mm of platinum is used the radius is only 1.5 mm. When a filter of 0.4 mm of platinum is employed 8 mc of radon produce no necrosis.

The author therefore concludes that we may employ a unit containing 1.5 mc of radon with filtration by 0.15 mm of platinum, a unit containing 8 mc with filtration by 0.4 mm of platinum or a unit of 10 mc with filtration by 1 mm of platinum without causing immediate necrosis.

Radium necrosis is the result of a caustic effect upon all tissues within a given radius of the radioactive source. It includes the supporting connective tissues, blood vessels, and nerves, the striated muscle in the tongue, the elements of bony structure, the skin and mucous membranes, and the walls of hollow viscera. In addition, local infection by accident is not uncommon.

Against the argument that the destruction of the tumor *en masse* by means of the beta rays insures a more certain disappearance of the tumor cells, the author argues that the action is only that of a radioactive caustic which is most dangerous, most difficult to control, and most expensive, and has no ad-

vantages over other caustics. If it is not admitted that certain kinds of malignant cells are destroyed by a selective action of α and gamma radiation, the radiotherapy of malignant tumors should be abandoned as inferior to other therapeutic methods. If it is necessary to destroy all neoplastic cells in the radiotherapy of malignant tumors, the preservation of normal tissues merits equal consideration.

The technique by which purified gamma radiation is employed makes use of needles designed for radium puncture with ultrapenetrating radiation. These needles are made of platinum and have a wall thickness of 0.5 mm. Use is made also of platinum tubes with a wall thickness of 1 or 1.5 mm which are designed for radium therapy within cavities reached through natural channels and for external curietherapy with the use of molded supports. The average duration of exposure with these two types of applicators is seven days. The needles contain 2 mgm of radium or 2 mc of radon while the tubes ordinarily contain 15 mgm or mc. In treatment of the skin a plastic mixture of paraffin wax and sawdust is used to maintain the applicator at the proper distance and to absorb secondary rays. Another type of applicator used for purified gamma radiation is a unit of 4 gm of radium which is placed at a distance of 10 cm from the skin and filtered by 1 mm of platinum.

In conclusion the author states that curietherapy with pure gamma irradiation offers the same technical possibilities as composite irradiation and is more effective. It pushes back the threshold of radium necrosis and permits the administration of much stronger doses of irradiation with selective action on cancer elements. A. JAMES LARKIN, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Strong L. C. Transplantation Studies on Tumors Arising Spontaneously in Heterozygous Individuals. I. Experimental Evidence for the Theory That the Tumor Cell Has Deviated from a Definitive Somatic Cell by a Process Analogous to Genetic Mutation. *J. Cancer Research*, 1929 xiii 103

Strong presents experimental evidence for the theory that the tumor cell has deviated from a definitive somatic cell by a process analogous to genetic mutation. The two tumors employed in his experiment (mammary gland medullary carcinomata) were quite different physiologically and presumably different genetically despite the fact that they were derived from the same mouse and were histologically indistinguishable.

If it is assumed for the sake of argument that one of these tumors possessed the same genetic constitution as the mouse tissue from which it arose then the other tumor tissue could not have that constitution. This assumption is a valid one since the recent interpretations of histogenesis would lead to the conclusion that qualitative cell divisions do not occur in animate forms. Every cell of the adult body is supposed to be endowed with the same genetic potentialities. Since therefore one of the tumors must have a different genetic constitution from the mouse tissues in which it originated it must have deviated presumably by some such a process as genetic mutation from the somatic tissue from which it arose. **JACOB M. MORA, M.D.**

Salomon A. How Should Angiomas Be Treated? (Wie sollen Angiome behandelt werden?) *Ztschr. f. aer. u. Forbild.* 19 8 xiv 59

Three kinds of tumors of the vessels are distinguished, the differentiation being of importance from the standpoint of treatment. (1) simple red angiomas consisting of hypertrophied capillaries (telangiectases), (2) cavernomata composed of large bluish hollow spaces (similar in construction to the corpora cavernosa penis) and (3) so called cirroid aneurisms consisting of arterial vessels. The last named are seldom observed and can be removed if at all only by operative means.

In the treatment of blood vessel tumors it is important to know whether the neoplastic tissue extends only superficially in the cutis or down into the subcutaneous tissue and whether there is a sharp demarcation or diffuse extension. For superficial tumors (naevi vasculosi) conservative methods usually suffice. In cases of tumors spreading deeper into the subcutaneous tissue only operative measures or destruction by heat or chemical means should be con-

sidered as a rule, as removal of the cutaneous portion of the tumor alone is of no use. The age of the patient (blood vessel tumors are most common in infants and young children) and the location of the neoplasm (on account of the cosmetic end result) are factors in the choice of treatment.

The growth of blood vessel tumors is often rapid, hence treatment should be begun as early as possible. For all deep subcutaneous angiomas and for the larger superficial moles excision is without doubt the best and most certain method. Conservative treatment takes too much time. A disfiguring scar must be avoided and the defect must be such as can be closed easily by suture or by a simple plastic procedure. Because of the danger of recurrence removal must always be radical. Hemorrhage, which is often considerable, can be controlled in most cases by compression and deep sutures. According to Lexer, it is of advantage to inject alcohol a few days before the operation. In cases of tumors of blood vessels of the face (carotid region), temporary ligation of the carotid may be necessary.

Angiomas of the orbit and those that communicate with the interior of the skull are best treated conservatively at first. Conservative methods are (1) measures producing inflammation and thrombosis (the application of intense cold by carbon dioxide snow, roentgen and radium irradiations), (2) measures that destroy the tissue directly (the use of thermocautery and strong caustics), and (3) measures that cause blood coagulation primarily (the injection of alcohol and electrolysis). For treatment with carbon dioxide snow the apparatus described by Pfeund and Strauss are convenient, but good results may be obtained with an improvised apparatus (ear speculum, etc.). In the cases of young children, the duration of the treatment should be from ten to thirty seconds and in those of adults twice as long. A piece of linen covered with ointment should be applied to the frozen skin.

Small moles may be removed by the roentgen ray, but this treatment is unsuitable for extensive disfiguring moles on the face as the cosmetic result is frequently poor (atrophy of the skin with telangiectatic formations). Better results are frequently obtained with the Finsen method and the use of the Kromayer quartz lamp, but radium irradiation is the most successful. Ideal results, however, are rare. Flat cutaneous moles which are not too large may often be removed with the Paquelin cautery (needle point). Deep punctures from 0.5 to 2 cm. apart are made under anesthesia. Frequently the cosmetic results are fair, but as the necessity for repeated punctures sometimes leads to deep unsightly scars the procedure is to be regarded as old fashioned and should be replaced by excision whenever possible.

Trichloroacetic acid chromic acid sublimate colloid and fuming nitric acid are used as chemical escharotics. The scars which they leave are usually parchment like and unsightly.

To produce blood coagulation from 0.5 to 2 c cm of a 70 to 80 per cent solution of alcohol may be injected directly into the cavernoma. The injection is begun at the periphery and continued systematically. It is repeated at intervals of a week. A trial may be made with a strong solution of dextrose instead of alcohol (as in the treatment of varicose veins). Sometimes this procedure combined with the use of carbon-dioxide snow is successful. Electrolysis also may give good results particularly in spider like angiomas, but it is tedious and painful. In cases of deep angiomas particularly those on the face Payr's procedure, larding the angioma with magnesium needles frequently gives good results.

The art of treating blood vessel neoplasms consists in determining the best and simplest procedure for the particular case—if necessary, combining several methods.

PIETRA (Z)

Hanser, R. The Problem of Malignant Tumors (Leber das Problem der bösartigen Geschwülste). Arch klin Chir 1928 clii 13 249.

Hanser summarizes his findings in the microscopic examination of Haidenhaus's so-called inoculation tumors in mice as follows:

2 The most varied starting material—carcinoma (squamous epithelial carcinoma or glandular carcinoma) and sarcoma (soft tissue sarcoma osteoid sarcoma, osteochondrosarcoma)—gave positive results on inoculation, regardless of whether the primary tumor or metastasis was used.

3 The form of the inoculated material whether fresh broth or warm cold or diluted autolysates was immaterial. Moreover the length of time it remained in the incubator played no recognizable rôle. This point is important in the question of the inoculation of living or dead cells.

3 There was no constant relationship between the number of implantation experiments and the successful results obtained.

4 The starting material, whether carcinoma or sarcoma gave rise to this or that tumor form with indeterminable variation. The impossibility of a definite histological classification (carcinosarcoma) of the results is therefore readily understandable.

5 The site of inoculation was of no importance as regards the site of the obtained tumors. Accordingly it was not a transplantation even when the tumor appeared at the site of the inoculation.

6 The time of development of the inoculated tumors varied between the extremes of two and twenty three months. The average time was one year.

7 There were individual cases in which, aside from metastases two tumors appeared that, on the basis of their different structures must be considered entirely separate growths.

8 Aside from human tumors, neoplasms from animals were used with success in these experiments.

in the production of malignant growths (not transplants) in inoculated animals.

In the discussion of this report LUBARSKY expressed the opinion that Haidenhaus's mouse tumors were actually inoculated and not spontaneous neoplasms. He disagreed with Haidenhaus's conclusion that his experimental results proved cancer to be an infectious disease. OSKAR MEYER (Z)

Mason M L. Carcinoma of the Hand. Arch Surg, 1929 LVIII 2107.

Carcinoma of the hand, a condition of advanced years occurs more frequently in the male than in the female and with the exception of roentgen carcinoma more often on the right than on the left hand. The majority of carcinomata are located on the dorsum of the hand.

It is convenient to divide these carcinomata into four large groups depending on the etiological factors present. In Group A are those arising from irritation, trauma, scars irradiation etc. The author has made a separate group A1 of the irradiation carcinomata because of their large number and importance. In Group B are the carcinomata arising from some previous growth—B*, congenital and B* acquired. In Group C are those appearing on the previously unchanged skin. In Group D are those cases in which data are too meager to allow classification. If roentgen and radium carcinomata are excluded Group A makes up two fifths and Groups B, C, and D each one fifth of all reported cases of carcinoma of the hand. Irradiation would probably account for 30 per cent of these carcinomata. All but a very few of the carcinomata are of the squamous cell type and therefore serious.

The diagnosis may be difficult even with microscopic section. The clinical course and history are of value in reaching a decision. Many granulomatous lesions appear to be in reality carcinomata in which frozen section is negative for malignancy.

The prognosis is in general favorable in the cases of Groups A and C fair in those of Group B, and very poor in those of Group D. In cases of roentgen carcinoma the prognosis is good providing all involved tissue whether carcinomatous or not is removed. Conservative measures are usually successful if they are promptly carried out and radical surgical treatment is needed only in neglected cases, with the exception of cases in Group B in which radical surgical intervention is advisable from the start. In carcinoma arising from roentgen dermatitis in which multiple areas of keratosis are present, it is imperative that all keratotic spots be excised.

The author reviews the literature and reports twenty five cases.

Carlson H A and Bell E T. A Statistical Study of the Occurrence of Cancer and Tuberculosis in 11 195 Postmortem Examinations. J Cancer Research 1929 xiii 126.

The study of Carlson and Bell seems to indicate that active tuberculosis is much less frequent in

cancerous than in non cancerous subjects and cancer is much less common in persons with active tuberculosis than in those without tuberculosis or with healed tuberculosis

However active tuberculosis is even less frequently associated with heart disease than with cancer and cancer is less frequently associated with heart disease than with active tuberculosis

These findings do not mean that active tuberculosis inhibits the development of both cancer and heart disease. They are due to the fact that the majority of persons with active tuberculosis have no other major illness and therefore the controls without cancer or heart disease must have a higher incidence of tuberculosis

The authors have found no statistical evidence to support the view that there is an antagonism between cancer and tuberculosis

The only proper control for the association of active tuberculosis and cancer is the incidence of active tuberculosis in some other disease

JACOB M. MORA M.D.

GENERAL BACTERIAL PROTOZOAN, AND PARASITIC INFECTIONS

Rich A. R. and McCordock H. A. An Inquiry Concerning the Role of Allergy Immunity and Other Factors of Importance in the Pathogenesis of Human Tuberculosis. *Bull. Johns Hopkins Hosp.* Balt. 1929. xlv. 273

The authors discuss natural species resistance or susceptibility to different types of tubercle bacilli, differences in natural resistance or susceptibility to the same bacillus in different individuals of a given animal species, acquired resistance to the tubercle bacillus, the underlying mechanism of allergy, the possibilities of the final outcome of the tubercle and the possibilities as to the outcome of the allergic inflammatory reaction

Natural species resistance or susceptibility to different types of tubercle bacilli. Different types of bacilli—human, bovine, etc.—affect a given species of animal with different intensity. In their studies the authors used a standard virulent human bacillus H37, a standard human bacillus of low virulence R1, a standard virulent bovine bacillus B1, an avian strain and a non pathogenic acid fast bacillus (timothy). They state that when rabbits are infected with moderate and equal doses of H37 and B1, those receiving the bovine bacilli develop extensive and rapidly fatal lesions, while those receiving the human bacilli, which are however extremely virulent for guinea pigs, may live indefinitely and at necropsy show at most isolated slight lesions. Thus the guinea is susceptible and the rabbit resistant to H37, whereas both are susceptible to B1, the rabbit somewhat more so than the guinea pig. If moderate and equal doses of H37 and R1 are given to different guinea pigs, those infected with H37 invariably die of widespread tuberculosis, while those infected with R1 practically always survive. Even

when the dose of R1 is increased to many times the lethal dose of H37, the disease will not spread progressively to a fatal termination. Accordingly there is a difference in virulence in different strains of the same type of human bacillus. This difference in virulence has nothing to do with species resistance or susceptibility for any species which is susceptible to all to H37 will be correspondingly less susceptible to R1.

Difference in natural resistance or susceptibility to the same bacillus in different individuals of a given animal species. Of any large series of animals of approximately the same size inoculated with the same amount of any type of tubercle bacillus by any route, somehow marked variations from the average in the extent of the lesions, although in general the series will present a fairly uniform pathological picture after a given lapse of time. Either a natural resistance is developed to a different degree in different individuals of the same species or the standard degree of natural species resistance becomes altered in individuals by uncontrollable conditions of nutrition and bodily well being.

Since there are definite differences in the virulence of a given type of bacillus and just as definite natural species susceptibility and resistance to any single given strain, virulence may be regarded as merely the relative ability of the particular strain of tubercle bacillus under consideration to grow in normal individuals of an animal species which is naturally susceptible to the type from which the strain in question is derived. No consideration of virulence is possible without a consideration of the host. It is always necessary to ask "virulent for what animal?" The relative virulence of different strains of the same type can be tested only upon an animal species which is naturally susceptible to that type.

Acquired resistance to the tubercle bacillus. An animal infected with a sublethal dose of tubercle bacilli becomes after some days protected against subsequent infection with much larger doses of bacilli than it could have tolerated originally. In rabbits and guinea pigs resistance may be acquired by infection with either virulent or avirulent human or bovine bacilli, regardless of the animal's original susceptibility to the infecting organism. Resistance so acquired will protect indiscriminately against subsequent inoculations of virulent human or virulent bovine bacilli, regardless of the animal's original susceptibility to the organism of reinfection. The resistance is not type specific.

Opinions differ as to the mechanism of acquired resistance. Many investigators believe that resistance acquired through infection is largely a result of allergy, which also appears shortly after infection. The infected body undergoes a change which renders the relatively bland protein of the tubercle bacillus capable of acting upon its tissues as a powerful irritant and poison. As a result of this change the cells of the allergic body are more extensively damaged and killed by a given amount of tuberculo-

protein than the cells of the normal body. Because of this enhanced irritant action of the tuberculo-protein on allergic tissues, and because of the resulting more extensive damage and death of cells, there appears a more violent acute inflammation at the site of action of tuberculo-protein in the allergic body. More extensive damage and death of cells and more extensive acute inflammation therefore constitute the local visible expression of the action of allergy. Constitutionally, the greater irritative effect of tuberculo-protein upon the allergic body is manifested by the fact that fever, malaise, prostration and even death will ensue when an amount of tuberculo-protein which is harmless for the normal body finds its way into the blood stream of the allergic body.

If the term 'allergy' is restricted to the acquired hypersensitiveness manifested by the tendency to react locally to the bacillus with exudative inflammation, necrosis and accelerated tubercle formation and to react constitutionally with fever, malaise, and prostration, it may be said that, in spite of the very common identification of allergy with immunity, there is no proof whatever that this hypersensitive-ness is responsible or necessary for the delayed spread or for the more prominent death of the bacilli in the infected resistant body.

What the mechanism is which holds the bacilli of re-infection at their site of lodgment is unknown. The local fixation of bacilli is not a mechanical result of the allergic inflammation. The study of lymph nodes draining the site of allergic inflammatory lesions in the human being with acquired resistance always reveals the sinuses of the nodes full of cells and debris drained from the lesions. Bacilli are usually very difficult to find in such nodes. It seems clear, therefore, that if the bacilli are actually held fixed locally in the lesion drained by the nodes, it must be by means of some specific (precipitin like?) mechanism which does not interfere with the free movement of other particulate matter and not merely by the mechanical outpouring of inflammatory exudate.

If allergy is the mechanism of resistance, allergy should be less highly developed in animals treated with dead bacilli in comparison with the hypersensitiveness of animals which are more highly resistant because of infection with living bacilli. On the contrary, however, inoculation with dead bacilli produces a degree of hypersensitiveness as great as that evoked by inoculation with living bacilli, a hypersensitiveness which is durable. Although an animal inoculated with dead bacilli develops just as marked an allergic hypersensitive-ness and exhibits just as marked allergic inflammatory reactions as an animal inoculated with living bacilli, the ability of the former to cause the death of the bacillus and to hold its growth in check—immunity—is distinctly less than that of the latter. The death and the restriction of growth of the bacillus must therefore be effected by some mechanism separate from that of the allergic inflammation—an independent mechanism which does not always

parallel in intensity the development of allergic hypersensitiveness.

The underlying mechanism of allergy. It is generally believed that the most probable explanation of allergic inflammation and necrosis in tuberculosis is that the condition is the result of an antibody antigen reaction in which the bacillary protein constitutes the antigen which reacts with an antibody formed during infection. According to this view the cells of the sensitized body might be perfectly normal and the plasma and tissue fluids contain an antibody capable of acting on the bacillary antigen to yield an irritating substance toxic for the normal cells. A second possibility is that the active antibody does not circulate freely in the body fluids but is bound to the tissue cells in such a way that the antigen antibody reaction leading to the formation of the injurious substances takes place actually within or upon the cells. A third possibility is that the production of cellular damage through allergic hypersensitiveness is a result of an antibody antigen reaction dependent upon antibodies present both in the tissue cells and in the body fluids.

In the authors' opinion no plasma antibody is necessary for the damage and death of allergic cells exposed to tuberculin, the individual cells of the various tissues of the allergic body are themselves actually hypersensitive to tuberculo-protein. Allergy resides in the cells. It is probable that the local allergic reaction in tuberculosis is of the same type as that following the local injection of foreign protein—egg albumin—to which the body has been sensitized—the so-called Arthus phenomenon. Inflammation and death of tissue in the allergic reaction are the consequences of a change in the body cells which renders them highly susceptible to damage by contact with tuberculo-protein. The exact nature of this change is at present unknown.

It is not definitely known whether allergy, once established, is ever completely lost. Hypersensitiveness may be said to disappear in certain cases, often to return with renewed vigor.

Residence in the allergic resistant body does not change the bacillus of infection so that when it is introduced into a normal animal it will produce a lesion in any way different from that which it originally produced.

The possibilities of the final outcome of the tubercle. These possibilities are as follows:

1 The bacilli may all die and the whole tubercle become converted into a hyalinized mass. If there has been necrosis the necrotic tissue may become calcified or even ossified.

2 The bacilli may remain alive in the center, encapsulated by a wall of hyaline scar tissue.

3 The tubercle may undergo widespread necrosis with spread of the proliferating bacilli to the surrounding tissues.

4 The tubercle may resolve and be completely absorbed leaving no trace.

The possibilities as to the outcome of the allergic inflammatory reaction. These possibilities are

1 If the reaction is mild and all bacilli are killed, the inflammatory exudate may be completely absorbed and the site restored to normal

2 If the reaction is mild and the bacilli remain alive at the site much of the inflammatory exudate will be absorbed but a tubercle or group of tubercles will develop about the remaining bacilli

3 If the reaction is initiated by a large number of bacilli and is accompanied by extensive necrosis, every degree of partial or complete connective tissue encapsulation and every degree of tubercle formation may be found depending upon the number of bacilli that remain alive in the necrotic mass and infect the periphery

The most prominent immediate reaction of the uninfected animal tends to be the proliferative tubercle, and that of the allergic animal an exudative inflammation but with the proper dose properly placed either the allergic or the non allergic body can be made to react with either exudative inflammation or tubercle formation

Miliary tuberculosis is not always produced by the sudden rupture of a tuberculous focus into a large blood or lymph vessel. The different sizes of tubercles seen in a given case do not indicate successive showers of bacilli resulting from successive sudden eruptions of such foci into vessels. Miliary tuberculosis must be regarded as nothing more or less than the result of a septicæmia with the tubercle bacillus

SAMUEL KAHN, M.D.

DUCTLESS GLANDS

Wilder R. M. Hyperparathyroidism Tumor of the Parathyroid Glands Associated with Osteitis Fibrosa *Endocrinology*, 19 9 Jul 231

Wilder describes a case of osteitis fibrosa in which conditions attributable to excessive parathyroid activity occurred in association with a malignant parathyroid adenoma. The condition was characterized by progressive weakness, loss of muscle tone, anæmia, pain in the bones, decalcification of the skeleton associated with an increase of the organic matter and foreign body giant cell tumors, hypercalcaemia and hypophosphatæmia. Four similar cases reported by others are described.

To some extent at least the disease is combated successfully by treatment with ultraviolet light and a diet rich in Vitamin D. The suggestion is made that Vitamin D may inhibit the activity of the parathyroid glands.

The surgical removal of the parathyroid tumor in the case reported was followed by marked improvement in strength and muscle tone, relief of the pain in the bones, increased calcification of the bones and the disappearance of a tumor of the maxilla.

Wellbrock W. L. A. A Malignant Adenoma of the Parathyroid Glands *Endocrinology* 1929 xii 285

The tumor described by Wellbrock, which was observed in the Mayo Clinic, measured 5 by 3 5

by 3 cm and was nodular bluish gray, fluctuating, semi elastic and covered by a fibrous capsule. It was situated at the lower pole of the right lobe of the thyroid gland. On section it was found to consist of four distinct encapsulated nodules composed of yellowish brown fairly firm, and reddish blue spongy tissue containing several cavities varying in size and filled with amber colored fluid. The general structure was that of the parathyroid gland, being made up chiefly of large clear cells.

The tumor was diagnosed as a malignant adenoma because of the polymorphism of the cells and the hyperchromatic nuclei, the presence of mitotic figures, the invasion of the neoplastic tissue into the capsule and the striking absence of foam cells and fat.

SURGICAL PATHOLOGY AND DIAGNOSIS

Staemmier M. Physiological and Pathological Regeneration (Physiologische und pathologische Regeneration) *Arch f klin Chir*, 1928 cliv, 550

In the mammal and in man there is no regeneration of organs merely a regeneration of tissues. In man like is formed only from like. At most the mesenchymal tissue is capable of producing related tissue.

In the epidermis the epithelial cells of the mucous membrane and the lymph and sex glands, regenerative capacity is well developed. Injuries of muscles heal as a rule only by scar formation but under peculiarly favorable circumstances, the skeletal musculature is capable of extensive regeneration if its gross structure remains intact. Even where there are gross defects, complete substitution may take place.

In the heart muscle the regenerative capacity is less, but primary regenerative formations occur. The myocardial fibers retain their capacity to proliferate and nuclear proliferations may lead to bursts of regenerative activity.

Injuries of the liver heal chiefly by scar formation. When large parts of the liver are removed the remaining portion hypertrophies through an increase in the number of the cells of the intact lobes. Entire lobes do not regenerate only hepatic cells (acute yellow atrophy of the liver, etc.)

In the kidneys true regeneration takes place when extensive necrosis of epithelial cells has occurred without destruction of the gross structure (sublethal poisoning, chromium poisoning, nephroses).

These facts suggest that a cell which has been present in the body for perhaps eighty years without substitution and without division may suddenly, following a chance injury, begin to divide and produce fully functioning cells. As the author regarded such an occurrence as improbable he made a careful study of the cell in its normal life course to determine whether processes may not occur which under physiological conditions point to a change in the cell.

He found that in the heart muscle double nuclei are frequently present besides whole rows of nuclei. They are almost never seen in the newborn and are

seldom seen in young children. In adults their numbers vary widely. These nuclear constructions represent, not a stable, permanent condition but apparently a phenomenon of division which passes rather quickly and occurs periodically and simultaneously (as though in epidemics) in a large number of nuclei. An increase in nuclei does not occur in the heart muscle, there is rather an impoverishment of nuclei. The process is a double one consisting in nuclear division and nuclear fusion.

In the transversely striated skeletal musculature, the findings are similar: the formation of double nuclei in the muscle fibers and long rows of nuclei. There are certainly changes in the form and also in the mass of the nuclei. The same pictures are seen under morbid conditions. After muscle injury, the changes are especially marked.

In the liver of the adult in addition to the numerous and well known hepatic cells with two nuclei the picture of amitotic nuclear division is frequently seen. These formations in connection with the double nuclei which are very often found lying side by side like the two halves of a breakfast roll indicate that in the hepatic cells also nuclear division goes on in postfetal life and after the cessation of growth. This is indicated moreover by the fact that the number of cells with double nuclei is greater in adults than in young children. Either cell division follows the nuclear division or the number of nuclear divisions is the same as the number of nuclei destroyed or the number of nuclear fusions.

The same observations are to be made in the epithelial cells of the injured uriniferous tubules of the kidney. Here also pictures of amitotic nuclear division are seen. Similar changes occur in other gland cells for example, in the pancreas in the gland and connective tissue. In general it appears to be a normal vital phenomenon which must also have a definite functional importance. The ganglion cells constitute an exception as they do not show processes of nuclear division.

Since pictures pointing to nuclear division are found in the most varied types of organs the occurrence of such division seems proved beyond a doubt. Accordingly amitotic nuclear division occurs normally in mammalian and human tissues presenting the greatest points of difference and continues after the termination of the period of growth.

With regard to the protoplasm of the cells the

author states that division of the cell body was not seen in the liver nor in the kidneys but it is very possible that the nuclear division described is followed by division of the protoplasm. The former view that the tissues examined are entirely stable (Rizzozero) is not correct. A numerical increase in the nuclei with probable destruction or fusion of nuclei occurs physiologically. The process may be described as a change of form which produces a regular but much more slowly occurring mutation of form. The multiplication of nuclei must bring with it an alteration in the metabolism of the cell. The change in form is therefore accompanied by rhythmic variations of metabolism. From time to time in the course of its life the cell receives new metabolic impulses from changes in its nuclear substance.

The author defines regenerations as new formations and transformations of tissue which serve to compensate for a defect of normal function which is already present (accidental regeneration) or to prevent the occurrence of such a defect (physiological regeneration). Compensatory hyperplasia and hypertrophy may be classed among the regenerative processes. The question as to whether the normal processes described in the liver, kidneys, heart and skeletal musculature are to be regarded as phenomena of regeneration, he answers as follows:

It is possible that in the liver and kidneys an almost unobservable replacement of cells takes place. In the heart and skeletal musculature the phenomenon seems to be merely alterations in the nuclei which result in increased metabolism and heightened function. Since they take place under normal conditions their object is to prevent a lowering of the metabolism. Since the new formations and transformations of tissue, which prevent the occurrence of a defect of normal function, are designated as physiological regeneration the nuclear changes described must also be reckoned as regeneration. In the course of the life of muscle fibers there takes place a gradual lessening of metabolism a consequence of wearing out which is associated with nuclear destruction or fusion. As a reaction there occurs a nuclear proliferation which compensates for the disturbance of metabolism (tissue rejuvenation). Regeneration is not therefore a process for which a defect from injury is necessary it is rather a heightening of physiological processes resulting from abnormally strong stimulation. ERIC HENRIEL (2)

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INTERNATIONAL ABSTRACT OF SURGERY

FEBRUARY, 1930

LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTLER, M.D., Sc.D., CHICAGO
Dean, Northwestern University Medical School

THE SURGICAL ATTACK UPON TRIGEMINAL NEURALGIA— JAMES M. CARNOCHAN

TRIGEMINAL neuralgia was not described by ancient writers as a distinct disease but was confounded with various types of headache and as such was mentioned by Aretaeus of Cappadocia. The name *tic douloureux* was attached to the affliction by Andre¹ of Versailles. Clinical descriptions have usually dated from the essay of John Fothergill² and the detailed account of Samuel Fothergill.³

Richet⁴ reports that strolling mountebanks and itinerant surgeons occasionally cut for neuralgia, making an incision on the side of the face near the ear. The cut no doubt was made in an effort to sever the auriculotemporal branch of the inferior maxillary nerve. Section of the several branches of the fifth nerve had been tried by numerous surgeons but recurrence of the neuralgia invariably followed. The next step in the surgical attack upon this formidable disease was that of removing sections of the offending nerve branch usually from one to three centimeters in length. The



JAMES MURRAY CARNOCHAN⁵
(1817-1857)

pioneer in neurectomy was Auguste Berard⁶ who in 1836 described the operation in the anticipation that permanent relief would result. This procedure was followed by relief in numerous cases the cessation of pain being immediate and lasting in some instances for from a few months to a year or two. Not satisfied with less than permanent relief, surgeons sought to excise the nerve nearer the encephalon and the earliest bold operative attack is that of John M. Carnochan, who in 1855 excised the superior

maxillary nerve from its exit from the foramen rotundum outward for a distance of more than an inch, at the same time removing Meckel's ganglion. Carnochan's operation, as will be noted from the description appended herewith was viciously mutilating nevertheless, patients who had suffered for any length of time with a severe neuralgia gladly welcomed any deformity if relief from pain would result. As a surgeon who saw a case operated by Carnochan's method remarked:

The patient seemed delighted with his mutilation since in exchange for it he was wholly freed from his neuralgic torture.

1852-1856 Berard in 1855 differentiated between septicaemia and pyaemia.

¹Observations sur le mal des dents. Paris 1757.
²A painful affect in the face. Medical Observations and Inquiries. London 1776. Vol. 1.

³A collection of essays on the nature of the pain of the face, commonly called the tic douloureux. London 1780.

⁴De la douleur (1810-1811) in which Richet's conclusions are used.

⁵From photograph in possession of the New York Academy of Medicine.

EDITOR'S COMMENT

THE recognition, the surgical treatment, and the results of treatment of perforated gastric and duodenal ulcer are subjects of great interest not only to the surgeon but to the physician and general practitioner as well. It can scarcely be repeated too often that the results of surgical treatment depend primarily, just as do the results of treatment of intestinal obstruction upon the early recognition of the disease and the number of hours that have elapsed between the catastrophe and its treatment.

Björger (p. 100) emphasizes this fact in a paper appearing recently in the *Acta chirurgica Scandinavica* and discusses the immediate and late results of surgical treatment in 1,767 cases of perforated gastric and duodenal ulcer collected from 30 hospitals in Sweden and operated upon by approximately 100 surgeons in the years from 1911 to 1921. Of 1,493 patients 684 were treated simply by suture of the perforation of these, 36.4 per cent died. Six hundred and sixteen patients were treated by suture of the perforation and gastro-enterostomy of these, 23.4 per cent died. In 84 cases resection was performed, in these, 25 per cent of the patients died. In 111 cases only tamponade or drainage was performed and 68.5 per cent of the patients died. The author makes this comment: 'The results in the cases treated by suture would not have been improved by gastro-enterostomy, but in the cases treated by gastro-enterostomy the mortality would probably have been somewhat lower if the suture method had been adopted' and, 'There is every reason to conclude that the mortality in these cases (of resection) would have been very much less if the radical procedure had not been chosen.'

The treatment advocated by the author is that employed at the Maria Hospital in Stockholm—longitudinal excision of the ulcer transverse suture, gastrostomy, and primary closure of the abdomen without drainage. In 78 cases operated upon by this method the mortality was 11.5 per cent, and in 45 cases operated upon within six hours of the perforation there were no deaths.

Although irrigation of the abdominal cavity has frequently been employed the author states that both in early and late cases the mortality has been less in the cases which were treated by simple sponging than in those in which irrigation was used.

To determine the late results of operation the author studied the data obtained from 684 patients operated upon at least a year previously. Three hundred and eighteen had been treated by simple suture, 315 by suture and gastro-enterostomy and 41 by resection. Of the first group cure or improvement had resulted in 54.3 per cent of the second group in 80.9 per cent, and of the third group in 80.5 per cent. It is the author's conclusion, however, that many of the patients who develop recurrence after simple suture recover completely or are greatly improved by a second operation or an ulcer cure, and the risk is no greater than in cases of ulcer without perforation. Of patients who develop recurrence after gastro-enterostomy, fewer are benefited by further treatment, and a second operation is associated with a much greater risk, and in patients with recurrence following resection the prognosis is still less favorable and the mortality higher.

Few operations in abdominal surgery are so frequently and successfully performed as removal of the diseased gall bladder and in few are the results of a slight error in technique more disastrous. Postoperative wound infection, injury of the bowel with subsequent fistula formation, and injury of the bladder and other viscera are unfortunate complications of abdominal surgery, but usually not irreparable. Injury or division of the common duct, however, in a large proportion of cases leads to disastrous consequences.

Beaver's interesting study of the variations in the extrahepatic biliary tract (p. 117) is another reminder of the fact that anomalies in the bile passages are common and is a helpful guide to the nature of such anomalies. In the cases studied Beaver found the 'normal' angular union of the cystic with the hepatic duct in only 58 per cent. The long and short parallel types of cystic duct were present in more than a third of the cases studied. In such cases, the author points out, the cystic and hepatic ducts are so intimately united by fibrous tissue that they are inseparable. Any rough manipulation may tear the thin septum between them with irreparable injury of the hepatic duct. Of great interest also is the frequent presence of accessory hepatic ducts (in 8.7 per cent of the cases studied), and the fact that an accessory right hepatic duct is often accessory also to the cystic duct (3 out of 4 cases).

wall of this cavity was broken down with a small chisel, and the portions of bone removed. The trunk of the nerve was now still further isolated from the other tissues in the *spheno maxillary fossa*. The posterior dental nerves being divided, and the dissection being carried still further the branches given off to form the ganglion of Meckel were reached. These were divided and also the branch given off to run up towards the orbit. Lastly, by the use of blunt pointed scissors curved on the flat side, the trunk of the nerve was divided from below upwards close up to the *foramen rotundum*. The hemorrhage was not very profuse the labial arteries being easily controlled by pressure of the fingers and the branches of the internal maxillary artery in the *spheno maxillary fossa* by dry lint or what is better the compressed sponge. The lips of the wound were brought together and maintained in place by thirteen points of twisted suture the German or Carls bad pins being used.

This severe and trying operation is perfectly justified by the fearful nature of the disease for which it was projected. It is one of those operations which could not be supported by the patient without the influence of chloroform. The handling of so large a nervous trunk with the forceps and the necessary contact with the hard instruments while separating it from its surrounding connections would I suppose be beyond human endurance without the aid of the anaesthetic influence of chloroform or ether. For the rest the effects of the cauteries upon the countenance can scarcely be called disfiguring and the patient speedily recovers without suffering from much constitutional disturbance.

It will be noted that the position in which Carnochan placed his patients is the identical position used by present day surgeons in following the temporal route for section of the gasserian ganglion.

Fowler found that recurrence within three years failed in only eight out of fifty two extensive resections of the second division of the trifacial. There seemed to be no practical way to prevent the regeneration of the branches of the nerve which had been resected peripheral to the ganglion, even when the *foramen rotundum* was blocked with plugs of bone. Gross¹ says

Professor Conner of Cincinnati has collected thirteen cases in which this operation was executed, in seven of which the pain is known to have recurred at a period varying from four weeks to sixteen months. Of the remaining six in which a return of the affection has not been reported the history is known respectively for twenty eight days two months fourteen months several months several years and the result of one at the time of the report was dubious. It would thus appear that the number of failures or cases in which temporary relief alone

was afforded, exceeds the cures under which are included the instances in which the result of the operation has not been fully reported. We may, therefore be warranted in concluding that the removal of the ganglion of Meckel is not essential and that the more simple operation of neurectomy of the superior maxillary nerve as far back as it can be reached by the knife, may be substituted for it.

When Gerhard van Swieten² under the patronage of the Empress Maria Theresa, undertook the reorganization of the Vienna School, he chose a faculty of distinguished teachers among whom was Lorenz Gasser, professor of anatomy. One of Gasser's pupils, Antonius Balthasar Raymundus Hirsch, in his inaugural thesis³ for the degree of doctor of medicine called the semilunar ganglion, the ganglion Gasserianum, saying, "Ganglion semilunare seu ab inventore interioris ejus fabricae, Gasserianum imposterum dicendum, ejusque circumferentiam." The dissertation is accompanied by a copper plate illustration of the ganglion.

The failure of Carnochan's operation to afford permanent relief in but few cases of trigeminal neuralgia stimulated surgeons to renewed effort to attack the fifth nerve within the skull. The earliest surgical attack upon the gasserian ganglion was that of William Rose,⁴ who, on April 2, 1890, instituted its removal for the treatment of trifacial neuralgia. Earlier, in 1885, J. Ewing Mears,⁵ in discussing trifacial neuralgia, said

If in any case I believed or had evidence by the symptoms or by the appearance presented in the branches of the inferior maxillary division, that the morbid condition had invaded the Gasserian ganglion I would not hesitate to enlarge anteriorly the oval foramen by the application of the burr attached to the surgical engine and by traction draw down the ganglion from its position in the fossa upon the anterior surface of the apex of the petrous portion of the temporal bone and proceed in a cautious manner to break it up or remove by section with the small blunt pointed scissors. The primary ligation of the internal maxillary artery precludes hemorrhage from either the meningeal media or parva the first of which is in intimate relation as it passes through to the foramen spinosum and the second as it enters the cranial cavity through the oval foramen. The position of the internal carotid artery as it passes from its canal in the petrous portion of the temporal bone into the cavernous groove should not be forgotten and great care should be taken to avoid injury to it by going beyond and behind the margin of the oval foramen.

¹ 57 0-3779

² Van J 13 32 2765

³ Lond & Lancet 1890

⁴ Transactio of the American Surgical Association 1885 11 483

⁵ System of Surgery V. II Phil & Lippa 1899

ART XII.—*Excision of the Trunk of the Second Branch of the Fifth Pair of Nerves, beyond the Ganglion of Meckel, for Severe Neuralgia of the Face and Third Eye.* By J. M. CARNOCHAN, Professor of Surgery in the New York Medical College Surgeon-in-Chief to the St. Michael's Hospital (New York) etc.

THE accounts heretofore given by authors of neuralgia, or the disturbance of the face are of a very vague and indefinite character. No accurate essays and monographs have been written on this subject, from the time of Fagbargh who published, in 1776, an elaborate description of the disease which attracted considerable attention. In all these efforts, the pathology of no disturbance is described with singularity. I presume the treatment has been as empirical as it has proved to be unavailing. The most of the cases have been referred to distant locations, especially in the sphincter muscles—to a foreign body acting upon the nerves—to the pressure of bone upon some portion of the nervous trunk. By some authorities, it is referred to increased vascularity and thickening of the nerves. While Ashley Cooper on the contrary states, that the nerves present their natural colour and are neither dilated in size nor enlarged. It now remains to be ascertained that bloodless results should follow from treatment based upon theories as different as these.

The disturbance of the face proper, or of the second branch of the fifth pair of nerves, is by far the most common form of facial neuralgia. This may be explained by the nerve, second branch, which is given off by this trunk and by the position which these branches occupy—in some places past up in osseous canals, and in others, subjected to exposure, to changes in temperature, as well as to the agency of morbid influences, from which the other two trunks of the fifth pair are exempt.

Facsimile excerpt from Carnochan's original report.

Carnochan's first report (1858) described three cases, one of which had had no recurrence after fourteen months. His report created a sensation, and practically all surgical writers of the day included Carnochan's procedure in textbooks and monographs dealing with the surgery of the head and neck. While not strongly advocating so extensive an operation, most writers agreed that in intractable cases the method was indicated. This is true of the works of Agnew, Gross, Ashhurst and others. Ashhurst says:

The superior maxillary nerve may be reached close to the foramen rotundum, the nerve being separated from the other tissues in the sphenomaxillary fossa and traced beyond the ganglion of Meckel and divided from below upward with blunt pointed scissors.

Samuel D. Gross says:

For the relief of neuralgia of the superior maxillary nerve, resection of the affected cord has within the last fifteen years been pushed to a very bold but perfectly warrantable extent by several American surgeons as Carnochan, Blackman, W. H. Mussey, and others, the first having taken the lead and thus earned for himself great credit in a class of cases previously considered as incurable.

While today Carnochan's operation would be obsolete, yet with the surgical knowledge of his day it was no doubt far safer to approach the foramen rotundum from the front rather than from inside the skull, as was later proposed by

both Hartley and Krause. We must remember that Carnochan was working in the pre-listerian period when a brain operation such as that of Hartley would have been attended with great danger of meningitis.

Operation. The principal instruments necessary for this operation are a trephine, the crown of which is three-quarters of an inch in diameter, an elevator, chisels of different shapes and sizes, a leaden or iron mallet, the bone forceps of Lister, small pieces of sponge tied to a stick or a piece of whalebone, and a small fixed trephine of half an inch in diameter which may be used to perforate the posterior wall of the antrum. The assistants being properly arranged the patient was seated upon a solid chair opposite a good light and was put under the influence of chloroform. The head was rested upon the breast of an assistant, who maintained it in this position. An incision was now made on the cheek commencing near the internal angle of the eye on the inferior edge of the orbit, opposite the anterior lip of the lacrymal groove. This incision was carried downwards and slightly outwards, for about an inch to a point opposite to the furrow on the lower portion of the ala of the nose, another incision which also terminated at this point, was made, commencing about half an inch below the external angle of the eye opposite the edge of the orbit, thus forming a V incision in the area of which is situated the foramen infra orbitale. The flaps thus resulting was thrown upwards and the branches of the second branch of the fifth sought for, some of these being found they served as a ready guide to the trunk of the nerve. This was now isolated from the surrounding tissues up to the point of exit upon the face from the foramen. The lip was now everted and the mucous membrane detached from the superior maxilla along the line of junction between the cheek and the gum. A sharp pointed bistoury was now inserted at the apex of the V incision into the mouth and carried downwards, so as to divide entirely the tissues of the cheek and upper lip along a line passing midway between the ala of the nose and the commissure of the lips. The two flaps thus formed were now dissected from the osseous tissue beneath one being reflected outwards, towards the ear the other internally towards the nose. The whole front wall of the antrum maxillare with the nerve passing through the foramen infra orbitale was thus exposed. The crown of the trephine was now applied on the anterior wall of the antrum immediately below the foramen infra orbitale and an irregular disk of bone removed so as to expose freely the cavity of the antrum. The circumference of the foramen, the hardest portion of the canal infra orbitale was now destroyed by Lister's forceps and a small chisel. The trunk of the nerve was now traced along the osseous canal in the floor of the orbit which was broken down with care so as not to encroach upon the tissues in the cavity of the orbit. Arriving at the back of the antrum the posterior

¹ American Journal of the Medical Sciences Philadelphia 1858

² International Encyclopedia of Surgery Vol I New York 1884

³ System of Surgery Vol II Philadelphia 1872

ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Brunner H Postoperative Sinus Thrombosis
Arch Otolaryngol 1929 x 217

The author summarizes the differences between latent sinus thrombosis and postoperative sinus thrombosis as follows:

1 Latent sinus thrombosis is found more often in persons with acute otitis while postoperative sinus thrombosis occurs more frequently in those with chronic otitis.

2 In latent sinus thrombosis the *Komplikationszacke* appears immediately after the operation on the bone. In postoperative sinus thrombosis the interval is longer usually about two weeks.

3 In latent sinus thrombosis mostly extensive local thrombi are found whereas in postoperative sinus thrombosis mostly mural thrombi are found when operation is performed immediately after the appearance of the *Komplikationszacke*.

4 In latent sinus thrombosis the prognosis is good if the operation is sufficiently radical. In postoperative sinus thrombosis it is unfavorable.

5 Postoperative sinus thrombosis occurs more often than is generally believed.

6 There are different causes for the development of postoperative sinus thrombosis. Most important is virulent infection of the wound. Exposure of the sinus is of less importance.

7 The interval before the appearance of the "*Komplikationszacke*" is usually about a week, especially if the postoperative sinus thrombosis is produced by injury of the sinus wall. Sinus thrombosis caused by spontaneous opening of the sinus—apparently because of hemorrhage from the sinus—requires a longer time to develop than that produced by simple exposure of the sinus wall. If postoperative sinus thrombosis is produced by a previous infection of the wound the interval is usually about two weeks.

JAMES C BRASWELL M D

Fraenkel W M Osteitis of the Malar Bone and Its Differential Diagnosis from Affections of Dental Origin (Les ostéites du maxillaire et leur diagnostic avec les affections d'origine dentaire)
Arch internat de laryngol 1929 xxxv 813

Osteitis of the malar bone is almost exclusively a disease of the growth period up to the twentieth year of age. It is most often of tuberculous origin but may be syphilitic or pyogenic. In infancy the exciting organism of the pyogenic form is usually the streptococcus whereas in the period from the tenth to the seventeenth year of age (another period in

which the incidence of the condition increases) it is the staphylococcus. When the osteitis is tuberculous the malar bone is usually only one of a number of bones involved.

The symptoms are much the same whatever the cause. The diagnosis is based chiefly on the history and the findings of laboratory tests. Because of the position of the malar bone roentgen examination gives little information. Tuberculous osteitis is usually located at the orbital margin. Its onset is insidious. As a rule its course is slow, but in some cases it may be acute. A period of tumefaction is followed by a period of fistulization. In the beginning pain is absent. The pain is slight at first but becomes progressively more severe. It radiates around the eye and toward the chin. In the early stages the swelling is localized. As a rule it increases slowly but occasionally it spreads rapidly—in a night. It involves the entire periorbital region. Beneath it a cold abscess is formed. The abscess develops without greatly affecting the general health sometimes rapidly in twenty-four hours, and sometimes over a period of weeks or months. The skin becomes purple and hot and ulceration of the skin or the mucous membrane appears. The pus rarely contains the Koch bacillus. Small sequestra may be eliminated. The disease may extend to the eyeball and its adnexa.

While, in itself, tuberculous osteitis of the malar bone is inclined to be benign it indicates grave general involvement of the organism.

In the period of tumefaction osteitis of the malar bone must be differentiated from the cellular reactions of infectious cutaneous dermatitis, jugal actinomycosis, chronic genal adenitis, beginning osteosarcoma, and osteoperiostitis of the superior maxilla. A fistula situated in the superior vestibular space may be either a dental or a jugal fistula. When it is jugal it must be differentiated from fistulae due to jugal actinomycosis, chronic genal adenitis, and suppurating paradental cysts from palpebral fistula and from necrosis of the malar bone secondary to suppuration of the upper molars. The differential diagnosis is discussed in detail.

The author reports ten cases, some of which he collected from the literature. They include one case of phosphorus necrosis. FLORENCE A CARLENTER

Wakeley C P G The Causation and Treatment of Displaced Mandibular Cartilage *Lancet* 1929 ccviii 543

Displacement of the mandibular cartilage is a rare accident due mainly to the shape and attachments

Mears concludes his paper with the statement that neurectomy to be successful should be complete, and some of his patients following this procedure remained perfectly free from pain for many years. Mears did not actually perform the operation he outlines for the removal of the ganglion.

Edmund Andrews¹ of Chicago devised a procedure similar to that of Rose, differing only in the details of the deeper dissection. Andrews' first operation was in 1892. In his method the ganglion was scooped out with a sharp spoon and inasmuch as he reports considerable hemorrhage it is possible that at his first operation he opened the cavernous sinus.

Several of the early operators followed what was then known as the Rose-Andrews method until the high temporal operation of Hartley and Krause came into vogue.

Hartley's² proposal was entitled "Intracranial Neurectomy of the Second and Third Divisions of the Fifth Nerve—a New Method" and was read before the New York Surgical Society, January 13, 1892. His case was that of a man aged forty-six who was admitted to the hospital August 8, 1891. In 1884, a modified Carnochan operation had been performed and the infra-orbital nerve with Meckel's ganglion had been removed. In 1886 there being no relief from pain, section of the inferior dental nerve was made. Hartley proposed to divide the second and third divisions of the fifth nerve completely in one operation, attacking the nerve on the inner surface of the skull outside the dura. The second and third divisions of the fifth nerve were isolated at the foramen rotundum and foramen ovale and a tenotome was used to divide both divisions of the nerve inside the skull on the inner side of the foramina and that part between these and a point beyond the gasserian ganglion was excised. Needless to say, the operation of Hartley was a complete success and is practically the present day method for the radical cure of trigeminal neuralgia.

Modern surgery acknowledges with gratitude the work of Rose, of Hartley, of Krause and of Victor Horsley, but particularly to Harvey Cushing of Boston, to Spiller and Frazier of Philadelphia, to Adson of Rochester, Minnesota and to Davis of Chicago (a pupil of Cushing) is due the development of the physiological interpretation as well as remarkable refinements of technique in this difficult surgical procedure.

Carnochan's name should be numbered among those pioneers of surgery who helped blaze a trail. While Carnochan's procedure was not destined to survive, nevertheless his attack upon the nerve was an incentive to further investigation and no doubt stimulated the more extensive operations of Rose, Hartley, and others.

John Murray Carnochan was born in Savannah, Georgia, July 4, 1817, the only son of John and Harriet Frances (Putnam) Carnochan. His father, a native of Scotland, removed at the beginning of the nineteenth century to Nassau (Bahama Islands) and afterwards to Savannah, Georgia. His mother was a grandniece of General Israel Putnam.

In early childhood the subject of this sketch being in feeble health, was taken to his father's home in Scotland, where he resided until eleven years of age. He was then sent to school in Edinburgh, completing the preparatory and academic course for the first degree of arts which was granted by the University of Edinburgh when he was seventeen years of age. After a short period of travel in England he returned to America and enrolled as a student in medicine under Dr. Valentine Mott at the same time registering for the lectures given by the faculty of the College of Physicians and Surgeons, New York City, from which institution he received the degree of Doctor of Medicine in 1836. Shortly afterwards he journeyed to France, the Mecca of medical students of that period, where he spent six years in study, observing the work of the great French surgeons of the day—Civiale, Lisfranc, Roux, Velpeau and others. He later visited London and followed the clinics and lectures of Benjamin C. Brodie and Sir Astley Cooper. He returned to New York in 1847.

In 1851 he was made Professor of Surgery in the New York Medical College, which chair he held until 1863. In 1870 he was appointed health officer of the port of New York.

Carnochan was noted for his bold ligations and unusual daring in devising and executing difficult and hitherto unattempted operative procedures. He wrote widely for the medical press and translated Sedillot's *Traité de Médecine Opératoire, Bandages et Appareils*, also Karl Kokitansky's *Handbuch der pathologischen Anatomie*. A number of his original papers were brilliantly illustrated after drawings by his wife, Estelle Morris, who was a skilled artist. Dr. Carnochan died in New York City as the result of an apoplectic stroke, October 28, 1887.

¹ International Medical News, Philadelphia, 1890, 479, 486.

² New York Medical Journal, March 19, 1892, 1, 317.

Kiep W H A Modification of Lagrange's Operation *Brit M J* 1929 ii 347

In the operation described a flap of conjunctiva, subconjunctival tissue and Tenon's capsule is reflected down over the upper limbus as in Elloch's trephine operation 2.5 mm above the cornea and the sclera is split with a Toole cornea splitting knife to form a small furrow corresponding to "a finger and a closely pared nail." A keratome is introduced into this furrow and an incision from 3 to 4 mm in length is made into the anterior chamber. The anterior lip of the scleral incision is then grasped with the forceps and a small piece like the paring from a finger nail is cut out. The iris usually presents in the wound but in any event a peripheral iridectomy is done the iris being placed in position by gentle massage of the cornea and limbus. The conjunctival flap is secured by one suture.

It is claimed that this operation causes minimal trauma to the intra ocular structures. It may be done with little or no collapse of the anterior chamber. The thickness of the flap is a protection against late infection.

In cases of acute congestive glaucoma it is advisable first to use miotics and to give saline solution intravenously for perhaps a week until the anterior chamber becomes fairly deep.

SAMUEL A DUEB M D

Goldstein I and Wexler D The Ocular Pathology of Periarthritis Nodosa *Arch Ophthalm* 1929 ii 88

The term periarthritis nodosa was given by Kussmaul and Maier in 1866 to a distinct pathological entity characterized by the presence of nodular thickenings of various sizes in the walls of small and medium sized blood vessels and caused by inflammatory disease.

The disease occurs most frequently in the mesenteric, renal, hepatic, pulmonary and cerebral vessels and the skin and muscles of the extremities. The symptoms correspond to the effects of the development of thrombotic aneurysmal dilatation and rupture of arteries on the respective organs. The most common manifestations are myocardial fibrosis from disease of the coronary arteries, multiple hemorrhagic infarcts with occasional acute or subacute hemorrhagic nephritis, multiple small aneurysms and ruptures of cerebral arteries leading to areas of softening and peritonitis from disease of the mesenteric artery or its visceral branches.

The condition may occur at any age but is most frequent in young persons. Its course is characterized by chronic sepsis, great emaciation, anemia and an irregular temperature curve. Definite periods of remission and exacerbation have been observed. When multiple organs are affected the diagnosis is difficult because of the numerous symptoms and bizarre clinical picture.

The disease has symptoms of a generalized infectious or toxic process for which no single organism can be held responsible.

Although there have been repeated observations of the ocular fundus the eye lesions have never been fully described. In the case reported the changes in the eye appeared to be confined to the choroid. The majority of the arteries were enlarged and showed inflammatory changes in varying stages and of varying degree. Some of them showed early changes in the form of a fibrin clot with a few degenerated blood cells, early necrosis of the inner media, and swelling of the endothelial and medial cells. Others showed rich adventitial and medial infiltration, varying degrees of intimal proliferation with or without thrombosis and in some cases necrosis and fragmentation of the medial wall. Some exhibited a media which though infiltrated was still intact. In others the media had been largely replaced by infiltrated cells or proliferated subendothelial tissue.

LESLIE L MCCOY, M D

EAR

Yates A L The Evolution of the Sense of Hearing *Proc Roy Soc Med Lond* 1929 xxii 1480

Yates states that the cochlea originally developed from the tactile organ which is represented in fishes as the lateral line. It sank into the mesodermal structures and was furnished with the working mechanism of a microphone and with nerves leading to the mid brain. In mammals it served to give an auditory indication of the presence of enemies or food. In apes the auditory protective reflex is partly disappearing and becoming an intellectual sense.

In man the intellectual sense has increased so greatly that to a great extent it has masked the protective sense. The centers in the mid brain which serve the latter have become relatively smaller and the centers which serve the intellectual auditory function have increased enormously. As a result, the human infant tries to speak but must be taught a recognized code of sounds which takes the form of words. Gradually from single words the growing to- teller learns to appreciate word groups.

The power of intellectual hearing apparently has grown as a result of man's ever increasing tactile and muscle sense. If the ear is damaged in a person with poor tactile power a small degree of damage will cause a great degree of deafness to conversation whereas in persons with a good tactile sense or persons who make great use of their intellect a far greater degree of damage to the ear is necessary before there is great impairment in the power to hear conversation. In persons who are becoming deaf the maintenance of intellectual powers and of full use of the tactile sense appears to be a vital factor in the prevention of certain forms of deafness.

JAMES C BRASWELL, M D

Drury D W Chronic Deafness—An Endocrine Study of 1000 Case Histories *Laryngoscope* 1929 xxxix 555

The author states that tinnitus aurium is common in cases of hypothyroidism. The deafness present in

of the meniscus. Anatomical textbook descriptions of the cartilage are quite at variance with the sectional diagrams. A study of over fifty specimens of the mandibular fibrocartilage revealed in every instance a dome like structure very closely applied to the mandibular condyle. The cartilage varies in thickness, but is always very much thicker in its center and anteriorly, there being a distinct depression between these parts. The posterior part of the cartilage which is very thin passes well down over the posterior surface of the condyle and fuses behind with the capsule.

The temporomandibular joint is divided by the fibrocartilaginous disk into two cavities each with a distinct synovial membrane. The circumference of the disk is adherent to the capsular ligament and anteriorly affords partial insertion to the external pterygoid muscle. As there are two definite cavities, movements are complex, consisting of a gliding movement and a rotation which rarely occur independently of one another.

Displacement of the mandibular cartilage may be caused by a violent cough, sneeze or yawn, a blow on the jaw when the mouth is open or the extraction of a lower molar.

The symptoms are very characteristic. The patient experiences sudden acute pain in the joint which may be referred to the pinna or the skin just above the pinna. Attempts to close the mouth are painful, salivation is excessive and mastication is difficult. As the acute reaction subsides and the condition becomes chronic the pain becomes less marked. Recurring displacement is manifested by an audible snap on mastication.

The treatment is more likely to give permanent results if the reduction is accomplished when the meniscus first slips out. The best method is the application of pressure behind the condyle while the mouth is open followed after a few minutes by slow closing of the mouth by elevation of the jaw. Several attempts may be necessary before the reduction is complete. In cases of long standing or frequent recurrence removal of the cartilage is indicated.

WILLIAM E. BRACKLETON, M.D.

Schmidt G. Operations for Prognathism (Iugenooperationen). *Zentralbl. f. Chir.* 1929 p. 462.

In order to correct the functional and cosmetic disturbances caused by a protruding lower jaw the body of the inferior maxilla on both sides has been sawed through and resected. Haacker successfully performed such an operation in the Munich surgical clinic in 1922 but the end results are not known as the patient cannot be traced. Disadvantages of this procedure are the frequently necessary sacrifice of teeth, the opening of the wound into the mouth cavity, the severance of the distal part of the main artery, veins and nerves of the lower jaw and the unfavorable muscle action on the bone fragments.

More effective according to Lane and Landmann Bruho is horizontal severance of the ascending portion of the jaw on each side below the semi-

circular indentation which lies between the articular and coronoid processes and above the "angula" on the internal aspect of the jaw and the entrance of the nerve artery, and vein into the canal in the distal portion of the jaw. After this has been done the entire distal portion of the jaw is replaced and approximated to the severed bone and firmly held in place by wires previously applied to the teeth of both jaws. This procedure does not necessitate the sacrifice of teeth or produce an opening into the oral cavity. The nerve and vascular supply of the jaw is protected; there is no unfavorable muscle action on the bone fragments; the maxillary arch is preserved, and the operation causes only a small, rapidly disappearing scar below the styloid process. At the time of incision care must be taken to prevent injury to the facial nerve particularly the upper branches to the external orbicular muscles and injury to the parotid gland. In chiseling through the bone care must be taken to avoid the internal maxillary artery.

In all of seven cases in which the latter operation was performed in the Munich surgical clinic in the period from March 1925 to January 1929 the results were entirely satisfactory. The patients were men ranging in age from eighteen to twenty five years. The cases are reported with photographs showing the condition before and after the operation. Two of the patients were shown before the Munich Surgical Society one year and fourteen days respectively after the operation. GEORGE SCHMIDT (2)

EYE

James W. M. Plasmoma of the Conjunctiva. *Am. J. Ophth.* 1929 xii 731.

In half of the cases of plasmoma of the conjunctiva which have been reported in the literature the condition was complicated or caused by trachoma. The treatment has consisted of excision and of radium irradiation both of which have proved beneficial. Only one case of malignant plasmoma has been recorded. In this instance exenteration of the orbit was done but death resulted from metastases.

James reports a case of conjunctival plasmoma in a young farmer who lived in a trachoma district and had previously been treated for trachoma. When the lids were everted pale waxy tumors measuring 4/10 by 3/10 mm. could be seen extending almost entirely across the fornices. Elsewhere the conjunctiva was thickened and edematous. There was a moderate pannus in each cornea. The general examination was essentially negative except for congenital harelip and cleft palate.

The tumors were excised. Microscopic examination showed that the epithelium was hypertrophied and contained many goblet cells. The adenoid layer was thickened and contained numerous plasma cells. Many lymphocytes and a few polymorphonuclear leucocytes were seen. Foreign body giant cells were present but there were no mitotic figures. Hyaline degeneration had occurred. The amyloid reaction was absent. SAMUEL A. DUKER, M.D.

Kramer R Intracranial Complications Following Sphenoid Infection *Laryngoscope* 1929 xxix 573

The author reports nine cases of intracranial infection resulting from disease of the sphenoid and gives the autopsy findings in six. In the three other cases autopsy was not performed but the clinical diagnosis was reasonably definite.

Intracranial invasion from the sphenoid sinuses may occur by way of the general blood stream through perforated blood vessels through dehiscences or necrotic areas in the bony wall or through the roof of the orbit.

In the cases reported the lesions found in the brain were meningitis, frontal lobe abscess, cavernous sinus phlebitis, encephalitis and ependymitis.

The cases were of the fulminating, acute and chronic types. In those of the fulminating type symptoms of a severe meningitis appeared a few days after an acute infection of the upper respiratory tract. Examination of the spinal fluid showed a bacterial meningitis and a fatal termination resulted a few hours after the patient's admission to the hospital. In all of the acute and chronic cases headache was present. Vomiting also was a constant symptom. Positive eye findings were present in five cases. Meningitic signs were present in all. Cultures of the spinal fluid were positive in all cases except one. Examination of the nose revealed a definite sphenoiditis in six cases. X-ray examination was negative.

The prognosis is usually poor on account of the difficulties of surgical approach. Surgical interference by the external route is difficult and dangerous and the use of the intranasal and intra-oral routes is not satisfactory. The results obtained with vaccines, sera and drugs have been discouraging. Early drainage of the infected sphenoidal sinus is indicated.

W. M. PATON, M.D.

MOUTH

Womat G. T. The Early Stages of Oral Cancer *Glasgow M. J.* 1929 cxii 144

The author reviews 244 cases of oral cancer—74 cancers of the lips, 93 of the tongue, 30 of the gums, 33 of the fauces and 14 at other sites. Only 5 of the patients were females.

Of the 74 patients with cancer of the lip, 73 were heavy smokers and a large majority gave a history of a non-cancerous abrasion of from one to three years duration. In every instance the abrasion occurred at the point where the pipe was held. In 2 cases the irritation was traced directly to a sharp tooth.

Of the 93 patients with cancer of the tongue all were pipe smokers. In 42 cases smoking was considered the sole factor, whereas in 15 tobacco chewing was an additional factor and in 36 there was irritation from a carious tooth.

Since non-smokers rarely develop carcinoma of the tongue it is believed that the irritation from carious teeth is usually of such short duration that it is rarely the sole cause of cancer.

Of the 30 cancers originating in the gums, 29 were associated with a low grade chronic infection with a purulent discharge about a tooth and all occurred in pipe smokers.

Of the 33 cancers of the fauces, 32 were in pipe smokers who gave a history of persistent "smokers' throat" long before the development of the malignancy. Three of the patients had a positive Wassermann reaction but showed no sign of oral syphilis.

Of the 14 cancers at other sites, 9 developed in the mouths of pipe smokers in an area where an artificial denture had caused irritation.

In conclusion the author says that any abrasion or other abnormality of the mucous membrane of the mouth in a man over forty years of age should be regarded with suspicion. If it persists after the removal of causes of irritation, a microscopic examination should be made. CHARLES W. FREEMAN, D.D.S.

Thoma A. H. A Comparison of Clinical Roentgen and Microscopical Findings in Fifteen Cases of Infected Vital Pulp *J. Dental Res.* 1929 ix 447

Infection of vital pulp is usually of the streptococcus type and often is the cause of somatic disease. Teeth which have been painful or very sensitive to extremes of temperature should be carefully investigated for pulpal infection. The fact that a tooth reacts positively to the vitality test or is painful when the pulp is exposed does not prove that the pulp is not infected. A careful study of the roentgen picture is often valuable as deep primary or secondary caries or secondary changes in the periapical tissue or both may be disclosed. Occasionally deep periodontal pockets or periapical infection of a neighboring tooth may be responsible for the infection of a vital pulp.

Such roentgen findings and a clinical history of sharp pains of short duration or dental neuralgia of a more lasting character are the best diagnostic evidence of infection of a vital pulp.

Thoma reports fifteen cases of infection of vital pulps with the clinical history and roentgen and microscopic findings. In nearly all there had been pain at the time the filling was introduced or subsequently. Roentgen examination usually suggested the condition. Microscopic examination showed evidence of inflammation and in several cases distinct areas of necrosis. The formation of adventitious or secondary dentine was clearly disclosed in several sections indicating the chronicity of the lesion and active tissue reaction to the infection. CHARLES W. FREEMAN, D.D.S.

Brocq P. The Extraction of Teeth During the Period of Acute Infection (Extraction des dents en période d'infection) *Bull. et mem. Soc. nat. de chir.* 1929 lx 833

In discussing the question as to whether a tooth that is responsible for osteopenostitis should be extracted during the period of acute infection, the author states that no categorical answer is possible.

certain cases of myxœdema he believes may be due to colloid infiltration of the aural structures. The administration of thyroid frequently results in improvement of the hearing.

Patients with deafness not due to an infective process frequently have a low basal metabolic rate. The author believes that there is a direct relation between dysfunction of the endocrine system and lowered metabolism and that the depression in the metabolism is reflected in the diminished acuity of hearing. This association is noted in a considerable percentage of cases of otosclerosis.

W. A. PERO, M.D.

NOSE AND SINUSES

KERN, R. A. and SCHENCK, H. P. The Relative Efficiency of the Clinical and the Roentgenological Methods for Sinus Disease Diagnosis With Observations on the Incidence of Sinus Disease Based on the Findings in 200 Asthmatics and 50 So Called "Normals." *Am. J. M. Sc.* 1929 *CLXXVIII* 168.

Independent clinical and roentgen ray examinations were made of the paranasal sinuses of 200 patients with bronchial asthma. While the incidence of sinus disease was found by both methods to be high (roentgen ray examination 80.5 per cent, clinical examination 67 per cent) there was marked disagreement between the findings of the two methods as regards individual sinuses. The variation as regards the different sinuses was as follows: ethmoidal sinuses 33 per cent, frontal sinuses 29.5 per cent, maxillary sinuses 27 per cent and sphenoidal sinuses 17.2 per cent. In order to explain these discrepancies the findings were checked by operation whenever possible.

No frontal sinuses came to operation. In the ethmoidal sinuses a roentgen ray error of 14.3 per cent was due chiefly to failure to find relatively acute involvement and polypoid disease or to confusion of overlapping sinus areas. A clinical error of 24.3 per cent was due to failure to recognize chronic disease.

In the sphenoidal sinuses a roentgen ray error of 10 per cent and a clinical error of 30 per cent were due to practically the same causes as those responsible for error in the ethmoidal sinuses.

In the maxillary sinuses alleged error of 48.2 per cent in the roentgen ray examination and of 43.2 per cent in the clinical examination are largely attributable to the diagnosis of a normal sinus as diseased. The findings in these sinuses are often not subjected to an accurate and adequate operative check, the condition of the antrum being determined merely by irrigation. However, in a sufficient number of adequate studies both methods of examination were shown to be in error, chiefly in the finding of evidences of past not present disease. The roentgen ray examination failed to reveal acute recurrent infection and the clinical examination failed to reveal chronic disease because of errors of transillumination.

In examinations of a control group of patients without a history of recent respiratory infection or of

sinus disease the roentgen ray showed sinus involvement in 73 per cent and the clinical examination indicated it in 6 per cent. The number of sinuses per person shown to be involved by roentgen ray examination was practically the same in asthmatics and controls. These findings are considered further evidence that sinus disease tends to produce permanent structural change which will often be revealed by the roentgen ray and at times by clinical examination long after the disease itself is over. The patient's age did not seem to have any material influence on the incidence of positive clinical or roentgen ray findings in asthmatics or controls.

The authors' conclusions are summarized as follows:

1 Neither the roentgen ray nor the clinical examination of the paranasal sinuses is 100 per cent accurate.

2 The roentgen ray is the more sensitive, especially in the study of the ethmoidal and sphenoidal sinuses.

3 The roentgen ray examination will pick up the evidences of sinus disease past as well as present. Therefore a positive roentgen ray finding does not imply clinically active disease.

4 The interpretation of roentgen ray findings in terms of pathological change (thickened mucous membrane, polyps) is not infrequently erroneous.

5 The roentgen ray examination will often fail to reveal acute recurrent sinus infection.

6 Clinical examination alone is able to give positive proof of active sinus disease only if pus is seen coming from the ostium of the sinus.

7 The clinical examination frequently fails to reveal chronic disease, especially of the ethmoidal and sphenoidal sinuses, if there is no abnormal secretion in the corresponding drainage areas and the mucous membrane as seen by the nasopharyngoscope shows little if any change.

8 It is therefore desirable that patients with suspected chronic sinus disease be re-examined several times before a negative clinical opinion is given.

9 The clinical examination sometimes reveals evidences of past sinus disease although not as frequently as roentgen ray examination.

10 The findings of transillumination may be fallacious. Polyps and mucoid secretion may transmit light normally and pathological change due to former sinus disease or normally thick bone may be wrongly interpreted in terms of active disease.

11 Neither method is therefore to be relied upon alone. Both must be used routinely in the study of cases of suspected sinus disease.

12 A positive finding in suspected chronic cases by either method of examination justifies the statement that a sinus may be diseased, but does not warrant the conclusion that it is actively diseased unless pus or polyps are demonstrated.

13 In asthmatics a positive finding by either method of examination is an indication for opening of the affected sinus.

14 Age is apparently not a material factor in the incidence of sinus disease. ADOLPH HARTING, M.D.

ably hard. The hardness has been described as woody or like that of iron or that of plaster of Paris. The thyroid lacks the elasticity of the hyperplastic or colloid gland. Nodulation is usual. The growth is adherent to muscles and surrounding tissue and can be mobilized *en masse*. It does not involve the skin like a carcinoma or sarcoma. The condition is usually diagnosed clinically as malignancy.

The treatment is surgical. Recurrence is best prevented by deep X-ray irradiation. Complete thyroidectomy should be aimed at and possible postoperative tetany should be anticipated. The ensuing myxedema necessitates continuous thyroid feeding after the operation. All dental and tonsillar infections should be cleaned up before or after the operation. Bronchocopy should be performed every six months for at least three years after the thyroidectomy on account of the possibility of secondary stenosis of the trachea.

Histologically three stages of the condition may be differentiated: an early, an intermediate and a late stage. The early stage is characterized by remnants of thyroid tissue, a diffuse increase in the connective tissue and an abundance of lymph follicles in which active proliferation is in progress. In the intermediate stage the thyroid tissue is very scarce and is usually compressed by nests of lymphocytes. There are numerous true lymph follicles with germinal centers surrounded by a zone of smaller lymphocytes, elements and in places by desquamated epithelial cells suggesting giant cell formations. In the late stage there are large bands of a fibrous texture which are partly hyaline. Lymph follicles are scattered throughout the fibrous tissue and a few more or less well preserved thyroid vesicles are found, especially below the capsule.

F. S. MODERN, M.D.

Ginsburg S. Toxic Adenoma of the Thyroid.
Arch Int Med 1929 xlv 73

Toxic adenoma of the thyroid has been designated by various terms ranging from enlargement of the thyroid gland in connection with enlargement or palpitation of the heart (Parry, 1825) to "iodine hyperthyroidism" (Jackson, 1914) and "nodular goiter with hyperthyroidism" (Rienhoff, 1927). The author agrees with Aschoff that the nodular form is a definite tumor formation and not merely a hyperplastic condition and that these simple adenomata can become toxic. Clinically a tentative diagnosis of toxic adenoma is justified when a nodular thyroid is associated with the constitutional symptoms of exophthalmic goiter either with or without ocular signs. Such a diagnosis is corroborated if iodine lessens or aggravates the symptom or if surgical enucleation or irradiation results in cure or improvement.

In a historical review Ginsburg traces the steps in the development of the present concept of toxic adenoma as differentiated from a hyperplastic condition of the thyroid. Before the discovery of thyroxin by Kendall in 1914 the clinical observation

that in "adenoma with hyperthyroidism" the toxic phenomena disappear within a few weeks after enucleation seems to have been the chief reason for the belief that toxic adenoma differed from hyperplasia.

Plummer showed that in a normal person 2 mgm of thyroxin a day may hold the basal metabolism from 10 to 30 per cent above normal, and 3 mgm may hold it 50 per cent above normal. Hyperthyroidism is therefore the result of an increase in thyroxin. The hyperfunctioning adenomatous goiter is the result of a pure hyperthyroidism where as exophthalmic goiter is not attributable entirely to an excess of the normal thyroid product but may be due to an incomplete thyroxin molecule.

This theory of toxic adenoma as contrasted with hyperplasia has met with wider acceptance by pathologists in Europe than by those in America. It has been approved by the majority of surgeons. Among those who do not see any fundamental clinical difference between the two conditions are Croth, Hertzler, Rienhoff and Crile.

Rienhoff states that true adenomata occur but are found in only 8 per cent of the cases of nodular goiter with hyperthyroidism seen at the Johns Hopkins Hospital, Baltimore and that in toxic nodular goiter diffuse hypertrophy and hyperplasia precede the development of the nodules. He therefore believes that subtotal thyroidectomy is indicated rather than enucleation. His preference for subtotal thyroidectomy is well supported by the fact that in only one third of the cases of toxic adenoma seen at the Mayo Clinic has the lesion been found single.

Among internists Plummer's views of the difference between toxic adenoma and exophthalmic goiter have met with almost unanimous acceptance. Toxic adenoma is held to be almost essentially a surgical disease.

According to the review of the literature by Krause roentgen therapy is successful in about 82 per cent of cases of exophthalmic goiter practically the same percentage as that in which operation is successful. Its use in toxic adenoma has been negligible because of the general tendency to consider this condition surgical.

Radium therapy has given very favorable results in both toxic adenoma and exophthalmic goiter. The author reports eight cases treated with radium at the Beth Israel Hospital, New York. The results obtained indicate that radium therapy is preferable to surgery in both exophthalmic goiter and toxic adenoma as it relieves the thyrotoxic symptoms and in decreasing the size of the growth relieves the compression symptoms of toxic adenoma. It must be supplemented by rest, regulation of the diet and medication.

Ginsburg agrees with Aschoff and Marine that nodular goiter is the same as adenomatous goiter, and he finds no fundamental clinical or pathological difference between toxic adenoma and exophthalmic goiter.

E. S. PLATT, M.D.

as the particular tooth involved and the type of lesion must be taken into account

The lower wisdom teeth must be considered separately. In these two different pathological conditions occur. The most frequent lesion is an inflammation of the dental sac without involvement of the bone or periosteum and without caries of the tooth. The symptoms—trismus, pain, fever and perimandibular swelling—are severe, but usually subside after incision of the overlying gum and lavage. As a rule the tooth is subnormal in its growth and should be removed, but its extraction should be delayed until after the infection has become quiescent. When a true osteoperiostitis develops the treatment should be that applied to other teeth.

It is generally agreed that benign cases of dental infection should be treated conservatively. In cases of moderate severity with slight suppuration at the apex, conservation of the tooth is often possible. However, all depends on the evolution of the infection. As a rule the infection subsides under conservative treatment. Moreover, experience has shown that early extraction is apt to spread it and provoke an acute osteomyelitis, especially when the shape of the tooth renders extraction difficult and traumatizing. Early extraction may offer a means of drainage but does so only in 50 per cent of the cases. It is much more simple to incise a collection of pus. However, if the suppuration continues, the tooth should be extracted.

Sinusitis is always a formal indication for extraction.

When the symptoms are very severe indicating osteomyelitis of considerable extent one or more teeth should be immediately sacrificed and the alveoli prudently opened. This complication accompanied by cellulitis calls for wide submaxillary and submental incisions.

ALBERT F. DE GROOT, M.D.

PHARYNX

Wilkinson H. F. Pathological Changes in Tonsils. A Study of 10,000 Pairs of Tonsils with Special Reference to the Presence of Cartilage, Bone, Tuberculosis, and Bodies Suggestive of Actinomycosis. *Arch. Otolaryngol.* 1929, 5, 12.

All tonsils show evidence of chronic infection if the presence of leucocytes in the crypts and ulceration of the epithelium is an indication of infection. In 14.27 per cent of tonsils there are pathological changes of bizarre types. In 11.21 per cent there are cartilage and bone in various proportions. Cartilage occurs in relatively larger amounts than bone. Chronic infection is a definite factor in the production of fibrosis. Fibrosis is relatively increased in cases with cartilage and bone. Chronic infection is an inciting factor in the production of cartilage and bone. Fibrosis increases independently of infection and in direct relationship to age.

Bodies similar to those found in cases of actinomycosis occur second in order of frequency in

pathological conditions of bizarre type in the tonsil. Tuberculosis of the diffuse type has an incidence of 0.52 per cent and is on the decline. In 0.17 per cent of tonsils there is bilateral involvement with tuberculosis. The frequency of occurrence of cartilage and bone is increased in cases of diffuse tuberculosis of the tonsils. Cholesterol can be seen in 0.63 per cent of tonsils. Foreign body giant cells and cholesterol are associated with each other in chronic degenerative processes of the tonsils. Trichinae are present in 0.06 per cent of extirpated tonsils. There is sufficient pathological change of interest in the tonsils to warrant routine microscopic examination of tonsils removed.

Paterson D. R. Tuberculosis of the Fauces, Tonsils and Enlargement of the Jugulodigastric Glands. *J. Laryngol. & Otol.* 1929, 49, 514.

Of 161 cases in which a clinical diagnosis of tuberculous enlargement of the jugulodigastric glands was made and the tonsils were subjected to histological examination, the tonsils were found involved in 57 (35 per cent). Such a high incidence of tonsillar involvement indicates the advisability of enucleating the faucial tonsils in the treatment of tuberculosis of the glands of the neck. If possible, this should be the first step in the treatment, but if the cervical glands show a tendency to break down it may be necessary to operate upon the neck first in order to prevent an unsightly scar. Unless the affected tonsil is removed, there is likely to be a return of the disease in the cervical glands. It appears probable that in children there is a greater tendency than in adults for tubercle bacilli to pass through the tonsils and infect the cervical glands without giving rise to the formation of tuberculous foci in the tonsils.

In none of the 161 cases reviewed was it possible to make a clinical diagnosis of tuberculous infection of the tonsils. In most of the children under twelve years of age the affected tonsils were enlarged but in those over twelve years of age the tonsils were quite as often small. JAMES C. BRASWELL, M.D.

NECK

Heyd C. G. Riedel's Struma, Benign Granuloma of the Thyroid. *Surg. Clin. N. Am.* 1929, 15, 495.

Riedel's struma is a chronic inflammatory disease of a granulomatous nature. It is comparatively rare. It appears usually between the second and fourth decades of life and is about equally common in both sexes. Syphilis and tuberculosis do not appear to be causative agents, but dental infection may play a rôle in its development. It is not dependent on gonorrhea.

The common symptoms are dysphagia, loss of voice, a tracheal pull and a midline pain beneath the cricoid cartilage. Dysphagia is rare. The dysphagia which develops early is more marked than would be supposed from the size and location of the growth. On palpation the thyroid is found remark-

Rabinowitch I M The Effects of Iodine Treatment with and without Vitamins on the Basal Metabolic Rate in Exophthalmic Goiter *Canadian M Ass J* 1929 xii, 156

The relationship of iodine to thyroid activity is as yet unknown. Some believe that in exophthalmic goiter the supply of iodine is insufficient. The author does not accept this theory. In support of his opinion he calls attention to the fact that when iodine is given and the gland stores an increased amount the basal metabolic rate may still remain high. From an analysis of normal and benign pathological thyroid tissue he concluded that some factor other than iodine insufficiency is responsible for exophthalmic goiter. As it is apparent that vitamins are concerned in the metabolism of inorganic elements it occurred to him that a deficiency of vitamins might be a cause.

McCarrison demonstrated that vitamins may be concerned with the metabolism of iodine and Harvey found that after the administration of cod liver oil to goats the iodine quotient in the milk of the animals was increased. Harris and Moore recently demonstrated that a lack of Vitamin D causes a deficiency of phosphorus or calcium or both and defective calcification whereas an excess of this vitamin results in an excess of these elements with excessive calcification.

In his investigations to determine whether there is a similar relationship between iodine and hyperthyroidism the author treated twelve cases of exophthalmic goiter with Lugol's solution and twelve cases with a mixture of Vitamins A and D and an iodofatty acid and compared the effects of these treatments on the basal metabolic rate. The vitamin mixture was administered in capsules each con-

taining 1,250 units of Vitamin A, 250 units of Vitamin D and 30 mgm of iodine. Two capsules were given daily. In the cases treated with Lugol's solution the average decrease in the basal metabolic rate was 3.2 per cent whereas in those treated with the vitamins it was 4.7 per cent.

Experiments were carried out also in two other cases. In one in which the initial basal metabolic rate was +78 per cent the patient was placed at rest in bed for ten days and then given Lugol's solution to the amount of 130 mgm of iodine per day. At the end of twenty days the basal metabolic rate was constant at +57 per cent. At this stage two vitamin capsules were given daily. On the fortieth day the basal metabolic rate was 50 per cent. Thereafter it increased.

In the other case an initial basal metabolic rate of +85 per cent was reduced by ten days of bed rest to +69 per cent and on the fifteenth day the administration of Lugol's solution to the amount of 130 mgm of iodine daily was begun. The lowest basal metabolic rate under this treatment +5 per cent was reached on the thirtieth day. Vitamin treatment two capsules representing 2 mgm of iodine daily (normal requirement), was then begun. On the fortieth day the basal metabolic rate was +41 per cent. It then began to rise.

The author concludes that the administration of large quantities of Vitamins A and D influences the course of exophthalmic goiter but he is unable to explain the mechanism of the action. He suggests that the vitamins function by assisting the assimilation of the iodine by acting on the secreting function of the thyroid or indirectly, by acting first on the metabolism of other inorganic elements such as calcium.

JOHN H WOOLSEY M D

Burwell C S Smith W C and Neighbors DeW
 The Output of the Heart in Thyrotoxicosis
 with the Report of a Case of Thyrotoxicosis
 Combined with Primary Pernicious Anemia
Am J M Sc 19 9 classiv 157

The case reported was that of a man who developed signs of hyperplastic (exophthalmic) goiter at the age of twenty three and was subjected to partial thyroidectomy at the age of twenty six. He was then in good health for two years. When he was thirty two years of age he was given roentgen ray treatment of the thyroid region because of recurrence of the thyrotoxicosis. When he was thirty four years old examination revealed in addition to marked thyrotoxicosis a palpable spleen, brownish pigmentation over the front of the neck and achlorhydria. The erythrocyte count was 1,200,000, the leucocyte count 3,200 and the haemoglobin value 24 (Sahli). Transfusion, the administration of iron and arsenic and rest were followed by slight improvement. When the patient was thirty five years of age the feeding of raw liver was begun. Rapid improvement then resulted. When he was last seen at the age of thirty six he was in good general condition.

Studies were made in this case to determine the cardiac output when the anemia was present and later after it had been relieved. An increase in the demand of the body for oxygen was found to be met by an increase in the volume of the circulation rather than by increased utilization of the oxygen already in the body. In other words there was a great increase in the cardiac output per minute and hence an increase in the work of the heart.

JOHN H WOOLSEY M D

Zimmerman I M Exophthalmos Following
 Operation for the Relief of Hyperthyroidism
Am J M Sc, 1929 classiv 62

Exophthalmos is frequent in severe thyrotoxicosis and after operation usually recedes or disappears. Zimmerman reports eight cases in which it developed after thyroidectomy. The patients ranged in age from nineteen to fifty three years. Four of them were males. In every case the metabolic rate fell after the operation to normal or subnormal. The exophthalmos was not accompanied by any other manifestation of hyperthyroidism. In most instances the increased prominence of the eyes was accompanied by conjunctivitis and lachrymation and in several by chemosis and edema of the eyelids. In one case the upper eyelid retracted behind the eyeball and in another retinitis pigmentosa developed.

In five cases the exophthalmos was bilateral. The interval between the operation and the appearance of the exophthalmos ranged from three to twelve months. In every case the condition persisted without improvement. Three of the patients had a very mild exophthalmos at the time of operation and two others showed lagging of the upper eyelid. After operation four showed evidences of hypothyroidism and three had basal metabolic rates ranging from 15

to 19 although they were free from symptoms of hypothyroidism. Five patients received thyroid substance before the appearance of the eye condition. None received iodine before the development of the exophthalmos except before and immediately after the operation.

Thyroid substance had no effect on the eyes after the prominence appeared. In two patients iodine caused a temporary slight recession of the eye bulge.

F S MODER M D

Don C S D The Treatment of Exophthalmic
 Goiter *Brit M J, 19 9 1108*

Don compares the results obtained in the treatment of hyperthyroidism by (1) rest combined with the administration of iodine, (2) X ray therapy and (3) surgery.

Thirty six of the cases reviewed were treated by rest and the administration of iodine, thirty-one of them for the first time. In eight cases in this group the pulse and metabolic rate were reduced to the normal. In eighteen there was marked improvement. In four no or only slight improvement resulted and in one case the condition became definitely worse. In sixteen cases a second course of iodine was given. The longer the interval after the first course the better the chance that the drug will act a second time. In six cases the improvement was marked and in five cases it was slight. In two cases the condition became definitely worse. Three of the patients died. In 37 per cent of the cases the result of the second course of iodine was equal to that of the first. Improvement after the administration of iodine is only temporary and a relapse follows discontinuance of the drug. During the treatment the weight increases although the metabolic rate may rise.

Twenty three cases were treated with the X rays. In six the basal metabolic rate became normal and in another six there was improvement. In five of the latter the improvement was marked. In nine cases there was only negligible or no improvement. Two patients died. In every case in which improvement resulted there was an increase in weight. The improvement was noticeable in most cases after three months and in all after six months of treatment. The shorter the duration of the condition the more amenable it was to X ray treatment.

Twenty five cases were operated upon after preparation with iodine and rest. In these there was no mortality. In one case ligation and sympathectomy were done and followed by improvement. Seventeen of the remaining twenty three patients were cured, four were markedly benefited and two were not benefited. Of sixteen patients who were re-examined after one year 80 per cent were cured or showed marked improvement.

The author concludes that iodine should be reserved for pre-operative preparation, that X ray treatment should be tried for a period not exceeding six months and that patients who show no improvement at the end of that time should be treated surgically.

F S MODER M D

Rabinowitch I M The Effects of Iodine Treatment with and without Vitamins on the Basal Metabolic Rate in Exophthalmic Goiter *Canadian Medical Association Journal* 1939 xvi 136

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JOHN H. WOOLSEY, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Melver J. and Wilson G. Spontaneous Subarachnoid Haemorrhage *J Im M* 1st 19 9
2011 89

A review of the literature reveals that spontaneous subarachnoid hemorrhage is more common than is generally believed. The earliest report on the condition was made in 1886 by Bramwell who gave as the three most important etiological factors calcareous degeneration, aneurism of the cerebral vessels and haemophilia without change in the vessel walls. The authors state that any condition causing changes in the walls of the peripheral vessels must be considered a possible cause of changes in the meningeal vessels. The most common causes are thought to be syphilis, trauma, embolism, mycotic processes and the acute infections especially meningitis and acute rheumatic fever. In the acute infections the cause is probably an infectious embolus. Arteriosclerotic degeneration is found in many cases showing no clinical evidence of its presence.

The onset is sudden. The mentality may be disturbed to the extent of somnolence, stupor, delirium or coma. Consciousness may be lost completely. Stiffness of the neck develops and Kernig's sign is always present. The pupils may be small, unequal, or dilated. One or more of the cranial nerves may be involved. There may be partial or complete hemiplegia. The face and arm are involved more often than the leg because the hemorrhage is usually of basilar origin with consequent pressure of the clot on the face and arm centers. Tendon reflexes are variable. Babinski's sign may be present on the involved side. Headache is usually severe and vomiting may be persistent. Pain or pressure is occasionally noted at the site of hemorrhage. The pulse and respiration may be slow or rapid depending on the amount of intracranial pressure and shock. A moderate rise in the temperature is frequently noted. The spinal fluid is bloody and under increased pressure. The eyegrounds often show marked changes with choking of the optic nerve or sclerosis of the retinal vessels and numerous hemorrhages. Leucocytosis has been reported. Glycosuria and hyperglycemia are found occasionally but disappear under spinal drainage. The mental symptoms persist for a variable length of time and subside gradually.

The possibility of this condition must be considered in cases of sudden illness with headache followed by stupor or coma. In many of the cases in the series reported a tentative diagnosis of meningitis, encephalitis, uremia, diabetic coma or cerebral apoplexy had been made. Examination of

the spinal fluid is of great value in the diagnosis. Bloody spinal fluid is rare in encephalitis and meningitis. The possibility of brain tumor, especially a tumor located in the posterior fossa, should be excluded before a spinal puncture is done. The pressure of the fluid should be estimated before any considerable amount is withdrawn, but 1 or 2 c.c.m. may be taken without danger even when the pressure is excessive and is sufficient for diagnostic purposes. Intracerebral vascular lesions may cause the presence of blood in the spinal fluid by rupturing into the ventricle. In nearly all such cases death results. Trauma can be ruled out by careful examination and roentgenographic study.

In the treatment of this condition spinal drainage should be done daily until the fluid is clear. Prolonged rest in bed is imperative and treatment of the underlying condition should be instituted. A moderate dose of magnesium sulphate daily and the intravenous injection of 50 c.c.m. of 50 per cent glucose daily or every other day will help to reduce the intracranial pressure. Fluids should be limited to from 500 to 1000 c.c.m. daily. Unless proper treatment is instituted death may result from the increasing pressure or complications such as epilepsy, motor weakness or mental retardation produced by the presence of blood clots in the subarachnoid space. E. S. PLATT, M.D.

Sargent P. and Greenfield J. C. Haemangiomas of the Cerebellum. *Brit J Surg* 1920 xvi 84

According to Lindau cerebellar cysts may be divided into the following classes: (1) dermoid cysts and cholesteatomata; (2) cysts formed as a result of hemorrhage or softening; (3) parasitic cysts; (4) cysts in relation to a tumor; (5) simple cysts; and (6) cysts in communication with the fourth ventricle. For completeness from the surgical standpoint the authors add two forms of extracerebellar cyst, viz., cystic acoustic nerve tumors and meningeal cysts caused by arachnoid adhesions. They report eight cases of cerebellar cysts together with the pathological findings. Their experience suggests that angiomas are the most common form of tumor in relation to cerebellar cysts. In one of their cases multiple tumors were found.

In several cases a close relationship of the condition to head trauma was established and in one case there was a history of the familial incidence of cerebellar tumor. A cyst in a brother and a sister. No relationship was noted between the size of the cyst and the size of the tumor. The cysts were rounded and had smooth walls. The haemangiomas were always embedded in the cortex of the cerebellum and frequently lay in a small dimple in the wall

of the cyst. Grossly the tumor appeared as a clearly defined rounded mass. Its cut surface was a red dish yellow and presented multiple minute cavities. In a review of the literature it was noted that angiomatous cysts of the cerebellum frequently coexist with retinal angiomata, hypernephromata or cystic disease of the kidneys or pancreas.

Of surgical interest in angiomatous cysts is the characteristic absence of a lining membrane, the walls of such cysts being formed by condensation of the normal neuroglia. Although simple emptying of the cyst rarely brings about a permanent cure, the removal of the tumor from the wall of the cyst seems to prevent the recurrence of symptoms and brings about complete restoration of cerebellar function. The dentate nucleus is never destroyed or broken into by the cyst. KNUZ H. HOUCK M.D.

Rupp F. Tumors of the Hypophysis and Surrounding Structures—Intrasellar and Suprasellar Tumors. Tumors of the Olfactory Fossa. Tumors of the Hypothalamus—and the Methods of Approaching Them Surgically (Die Geschwulste der Hypophyse und ihrer Umgebung—intra und suprasellare Tumoren Tumoren der Olfactoriusgrube Geschwulste des Hypothalamus—und ihre Zugangswege) Deutsche Zeitschrift für Chirurgie 1919 ccxv 266

Topographically, a distinction is made between (1) hypophyseal tumors (2) suprasellar tumors (3) tumors of the olfactory fossa and (4) peduncular and hypothalamic tumors. To the first group belong the true hypophyseal tumors. These vary greatly in their histological structure but the majority are adenomata and cysts. They may be definitely differentiated from the other groups because of their narrowly delimited location. They are characterized roentgenologically by ballooning out of the sella turcica. They may be distinguished roentgenologically from extrasellar tumors by the absence of destruction of the clinoid processes. They are characterized clinically by endocrine disturbances manifested by such conditions as Pituitary dwarfism, acromegaly, Simmonds' cachexia, Froeblich's dystrophia adiposa genitalis and Brugsch's dystrophia osteogenitalis acromiaria. Bilateral contraction of the visual fields is only a secondary sign. Choked disk is nearly always absent. Increased intracranial pressure occurs late. The only treatment to be considered is operation.

To the second group of tumors under discussion belong the new growths above the anterior border of the roof of the sella. Most of these are so called endotheliomata. Americans speak of suprasellar meningiomata (Cushing). These tumors because of their position show a quite typical disease picture. They include also the atypically located adenoma of the anterior lobe and tumors of the infundibulum. They are characterized clinically by the early appearance of bitemporal hemianopsia. The growth displaces the tissues by pressure and does not infiltrate them. Roentgen examination shows destruction or a bending in of the clinoid processes.

Choked disk is noted only in severe cases, and disturbances of internal secretion are not present until the condition is advanced.

The third group under consideration comprises tumors of the olfactory fossa which also are endotheliomata. In appearance and structure these neoplasms resemble the suprasellar meningiomata. Their point of origin is supposed to be the meninges of the olfactory sulcus. The earliest symptom is anosmia. This is followed by contraction of the visual fields and disturbances in the frontal sinus. Choked disk is usually present. As a rule the roentgen picture shows the slight widening of the sella turcica which is characteristic of increased intracranial pressure.

The fourth group is made up of the prognostically unfavorable ventricular and peduncular tumors lying intracerebrally in the substance of the hypothalamus. Histologically most tumors of the crus cerebri (peduncular tumors) are gliomata. Gliomata tend to appear in young persons and are of slow growth. Typical signs of peduncular tumors are somnolence, ataxia, and polyuria. Pressure on the chiasma produces contraction of the visual fields but frequently this is not very marked. Choked disk and endocrine disturbances are present with great constancy. On roentgen examination the clinoid processes are found. In the differential diagnosis hydrocephalus of the third ventricle must be ruled out. These tumors are inoperable.

In conclusion the author discusses the operative technique. The transfrontal route is the route of choice for suprasellar tumors and meningiomata of the olfactory fossa (Groups 2 and 3) and the transsphenoidal route for tumors of Group 1.

HELLNER (Z)

Dandy W. E. An Operative Treatment for Certain Cases of Meningocele (or Encephalocele) Into the Orbit. Arch. Ophthalmol. 1929 11 133

The case reported was that of a sixteen year old girl who presented a pulsating exophthalmos of the left side with downward and inward deviation of the eye. In the examination it was borne in mind that a pulsating exophthalmos may be caused by (1) an arteriovenous aneurysm of the brain, orbit, or cavernous sinus () or (2) an arterial and arteriovenous aneurysm of the orbit or (3) a defect in the roof of the orbit. The patient had a minor deformity of the left ear and X-ray examination showed absence of the posterior half of the orbit and great thinning of the bone over the entire frontal area.

The operative approach was that routinely used for hypophyseal tumors. A measured transplant of bone from the outer table of the skull was snugly fitted subdurally over the bone defect. Operation revealed the following other congenital deformities: (1) a meningocele () a large extradural vein which apparently replaced the cavernous sinus and (3) absence of the internal carotid artery on the affected side. In addition the outer surface of the brain was covered with large pools of fluid in the subarachnoid

space and the leptomeninges were opaque and greatly thickened.

The exophthalmos completely disappeared with the subsidence of the postoperative edema and seven teen months later the internal strabismus and vertical deviation were corrected by resection and advancement of the external rectus muscle. Twenty one months after the operation a slight downward displacement of the eyeball still remained, but the eyes focused well, the extra-ocular movements were nearly normal, there was no exophthalmos or pulsation of the eyeball, and roentgen examination showed the graft to be unchanged. КЕТ II НОВЫЙ МД

SPINAL CORD AND ITS COVERINGS

Oppel V. An Attempt at Operative Treatment of Syringomyelia by the Method of Pussép (Versuch einer operativen Behandlung der Syringomyelie nach Pussep). *Lein. Chir.* 1929, xvi, 8.

In seven cases with pronounced symptoms of syringomyelia (muscular weakness, disturbances of the pain and temperature sense and trophic disturbances) the author opened the spinal cord in the cervical portion according to Pussép's method. In three cases the improvement was so marked that it bordered on complete cure. In no instance were

there any serious sequelæ. In one case in which the opening into the central canal was made in front of the denticulate ligament, through the anterolateral tracts a spastic condition of the arm developed. In two cases, the incision in the soft parts did not heal by primary intention, the edges separated but there was no trace of suppuration and healing occurred later by second intention. Pussép noted this same phenomenon in two of his first four cases. In only one of Oppel's cases was the operation without result.

The operation is based on the assumption that many of the symptoms are due not directly to the gliomatosis but to the pressure of the cerebrospinal fluid in the central canal. The technique is simple. Laminectomy of the sixth and seventh cervical and first dorsal vertebrae is done, the dura mater is opened, and a test puncture of the central canal is made 4 mm. lateral from the midline on the side of the pathological changes. The central canal is opened with a fine scalpel for a distance of 1 cm. and the fluid drained off. The dura and soft parts are then sutured. In some cases it may be better to make the incision into the central canal through the anterolateral tracts or posteriorly in the midline through the posterior sulcus and the posterior commissure. Петров (Z)

SURGERY OF THE CHEST

TRACHEA, LUNGS, AND PLEURA

Pool E H and Garlock J H A Treatment of Persistent Bronchial Fistula *Ann Surg* 1920 72, 13

Bronchial fistulae occur most commonly with empyema thoracis and lung abscess. The majority close spontaneously. Persistence of a fistula may be due to suppuration in the parenchyma of the lung or the bronchial tree, the presence of a rigid walled empyema cavity into which the fistula opens, the formation of a bronchocutaneous channel or the presence of a foreign body.

Operative closure of a bronchial fistula should not be attempted until the need for drainage of a lung suppuration has passed.

Very small fistulae will frequently close following the local application of a cauterizing agent.

For the closure of a bronchial fistula which persists in spite of conservative measures, the authors describe an operative procedure consisting in plugging of the fistula with a pedunculated muscle flap. The operation is simple and widely applicable and has proved successful in the authors' experience.

The production of a bronchial fistula in an experimental animal is attended with great technical difficulties. Although the experiments reported by the authors did not duplicate exactly the conditions found in man, the results obtained indicate clearly the processes of repair following closure of a bronchial fistula by the method described.

A muscle flap placed in a bronchial fistula to effect its closure remained viable and was not completely replaced by fibrous tissue. Microscopic examination at the end of a year showed intact muscle fibers and growth of bronchial epithelium over the muscle flap.

HOWARD A. McKENIENT, M.D.

McEnery E T Aspiration in Empyema of Children *J Am M Ass* 1929 53:11 36

At the Children's Memorial Hospital, Chicago, 37 patients were treated for empyema in 1918. Thirty-two were treated by aspiration alone. Of the 25 were completely cured. One of the 4 others had 1 aspiration and died of pneumococcus septicaemia pneumonia and meningitis. At autopsy, only 1 oz of pus was found. Another was taken home against advice. The third was at no time a safe operative risk and died from pneumonia and extensive pneumothorax after 10 aspirations with the evacuation of 3,635 c.c. of pus from the left side and 300 c.c. from the right side. The fourth could not be traced. The mortality was 9 per cent. It is reduced to 6 per cent if the child with septicaemia meningitis and only a small encapsulated empyema containing 1 oz of pus is excluded as appears justifiable.

The aspiration was done with a large Luer syringe or a modified I obtain aspirator under local anesthesia induced with 1 per cent procaine hydrochloride. No shock or alarming symptoms were noted in 122 aspirations. Empyema does not constitute an emergency. Aspiration or operation must not be done too soon or too often. In the cases reviewed, the number of aspirations varied from 1 to 11, and the interval between operations from two days to two weeks or more. The procedure was guided by the general condition, the evident amount of pus, the degree of respiratory embarrassment, the location of the heart, and the temperature curve.

Cultures of the aspirated pus showed the pneumococcus in 28 cases, the hemolytic streptococcus in 3 cases, and the staphylococcus albus in 1 case. The average stay in the hospital was three and half months. This can be reduced considerably by allowing the patient to go home between aspirations.

The temperature curve was rather uniform, dropping to nearly normal after an aspiration and then gradually returning to from 101 to 103 degrees F within one or two weeks. It was therefore to some extent an indication for repeated aspirations.

Certain cases of extensive empyema were associated with a sinking in of the upper part of the chest, lowering of the shoulder and a lateral scoliosis with the concavity toward the affected side, but all of these sequelae were completely corrected. The last signs to disappear were slight dullness and suppression of breath sounds and a haziness in the roentgenograms which often persisted for some time after the return to health.

Three objections to aspiration have been made, that it is not possible to remove all of the pus, that large fibrinous masses cannot be removed, and that there is danger of puncturing the lung and causing pneumothorax. Repeated roentgenograms have shown that large amounts of pus can be absorbed, whether pneumothorax is present or not. The large fibrinous masses have given no trouble and apparently are absorbed. Pneumothorax occurs through injury to the lung by the aspirating needle or as the result of spontaneous rupture into a bronchus with free expectoration of pus. Roentgenograms were of special aid in the presence of pneumothorax; the clinical signs were of very little value in revealing the extent of the condition. Spontaneous rupture was regarded as a favorable occurrence and pneumothorax was not considered a serious complication.

The treatment of these cases by aspiration alone was not done as an experiment. Aspiration was necessary in the first case and because of the successful result was continued in the others, but always with the intention of resorting to the usual methods if necessary. The mortality is the lowest recorded.

except that in Kassowitz' inexplicable series of 50 cases treated by rib resection at an ambulatory clinic, in which the mortality was at 0.6 per cent.

The authors are convinced that the youth of their patients was an important factor in the success of the treatment. Fifty per cent of the children were under or just three years of age, 30 per cent were under or just two years of age and 12 per cent were under or just one year of age. They believe that the greater pliability of the chest wall in infants is better adjusted to the removal of pus and is less favorable to open intervention with its infringement on vital capacity, especially when the operation is done before the mediastinum is fixed and while the 2 chest cavities still act as nearly 1 chamber.

The favorable results reported from aspiration followed by irrigation with 0.5 per cent ethyl hydrocupreine are regarded as no better than the author's results without ethyl hydrocupreine.

Aspiration is not advocated as a routine measure for all cases, but is presented as the procedure of choice in infancy. E. S. LEATT, M.D.

HEART AND PERICARDIUM

Bowers L. G. Pericardotomy for Pyopericardium. *Arch Surg* 1939 218 301

Suppurative pericarditis is in most instances the result of the extension of an infectious process of the lung and pleura. In many cases it has followed a perforating wound with direct implantation of the infecting agent. As the exudate which collects in the relatively small pericardial sac can find no physiological outlet, the early establishment of surgical drainage offers the best prognosis. Pericardotomy is a simple procedure which is associated with little or no risk and may save life.

In the author's technique a curvilinear incision is made along the left border of the sternum beginning at the fifth left sternochondral junction and extending laterally just below the inferior border of the sixth rib to a point 2 cm. to the left of the costochondral junction. The flap is dissected upward from the underlying rib to expose the costal cartilage of the sixth rib, and the costal cartilage is removed. The pleura and lung are then drawn laterally by means of a broad retractor, and an aspirating needle is introduced into the pericardial sac to determine the depth and the location of the exudate. When this has been done a gall bladder trocar is introduced into the sac. The cavity is thus drained by gravity.

The balance of the exudate is drained by attaching a large Luer syringe to the free end of the tube and using suction. A pursestring suture is then placed around the trocar, the trocar is withdrawn from the sac, and a male catheter of similar caliber is introduced and fixed with the pursestring suture. The sac is then irrigated with 1 liter of physiological salt solution. The catheter is finally drawn through a stab wound 1 in. above the incision near the sternum, and the wound is closed with interrupted

sutures. Finally the drainage tube is connected with a large bottle containing antiseptic fluid. The drainage tube is kept open by daily injections of sterile saline solution. ANTHONY F. SAVA, M.D.

ESOPHAGUS AND MEDIASTINUM

Ouille. Antethoracic Esophagoplasty by the Wullstein Lexer Procedure for Impassable Cicatricial Stenosis of the Thoracic Esophagus. Cure Good Functional Result (Esophagoplastie antithoracique par le procédé de Wullstein Lexer pour sténose cicatricielle infranchissable de l'esophage thoracique guérison bon résultat fonctionnel). *Bull et mém Soc nat de chir* 1939 17 683.

The patient whose case is reported by Ouille was a man aged twenty-two years who had swallowed a mouthful of hydrochloric acid. For eight days thereafter he was able to eat, but at the end of that time he vomited all solid food and sometimes even liquids. After two months he entered the hospital very much emaciated. Following a gastrostomy he gained strength. Seven months after his admission to the hospital attempts at esophageal catheterization were made but were unsuccessful. There was an impassable stricture below the tracheal bifurcation.

At operation performed August 11, 1933, the lower part of a new esophagus was formed from a loop of jejunum. At a second operation performed September 29 a cervical esophagostomy was done. At a third operation performed November 19 an attempt was made to form a cutaneous tunnel to unite the cervical orifice of the esophagostomy with the thoracic orifice of the jejunostomy. The orifices were 18 cm. apart. The union of the flaps was not perfect. At the end of several weeks only the lower half of the tunnel was cicatrized and able to function. In a fourth operation a second attempt was made to connect the esophageal orifice with the cutaneous orifice. Three further operations in two years gained some ground, and in 1938 after treatment for syphilis and polyvalent preoperative vaccination complete closure was obtained. One year later the patient was able to eat all kinds of food.

Coxsö, who presented Ouille's report to the Society, reviewed the various techniques which have been used for the formation of a prethoracic neo-esophagus. He stated that the Roux operation can be successful only rarely because it is difficult to obtain a long enough loop of small intestine especially since the length of the loop is usually diminished by gangrene of the upper portion. The Herzen modification (unilateral exclusion of the loop with lateral enterogastrostomy and passage of the loop behind the transverse colon across the mesocolon) has the advantage of reducing the danger of gangrene and slightly decreasing the length of the jejuno-esophageal tract. However, experience has demonstrated that it is not always easy to find a loop long enough to extend up to the neck. Lexer

performed the Herzen operation, but established the jejuno oesophageal union by means of a cutaneous tunnel. This is the Wullstein Lexer operation or jejuno-dermato oesophagoplasty. It is applicable to all cases the length of the cutaneous tunnel compensating for insufficient length of the loop. Brazen constructed a tunnel with cutaneous flaps and obtained good results in seven of eight cases. The most delicate stage is the joining of the cutaneous tube to the oesophageal orifice and the gastric cavity. The lesser severity of the dermato oesophagoplasty is almost compensated for by a certain inferiority of the functional result.

TUFFIER in discussing Ouhé's report said that he had used Roux's technique in five cases. The difficult stage was the oesophago-intestinal anastomosis when the sutures cut through leaving a fistula.

PAGE

Cleminson F J. Thoracotomy in the Treatment of Malignant Disease of the Oesophagus by Radon. *J Laryngol & Otol* 1920 xlv 577.

Woodman M. The Insertion and Use of Radon in Cancer of the Oesophagus. *J Laryngol & Ot* 1919 xlv, 584.

CLEMINSON states that articles by Birkett on the treatment of carcinoma of the tongue with radium and by Ramanis on access to the oesophagus by thoracotomy suggested to him that it might be possible to improve the results obtained in carcinoma of the oesophagus by introducing radon seeds into the periphery of the growth by means of thoracotomy. He reports four cases treated in this way.

WOODMAN states that the treatment of cancer of the oesophagus by the introduction of a large dose of radium into the center of the growth has definitely

failed. The dose so applied is not in contact with the oldest and most necrotic part of the growth and is farthest away from the actively growing edge. Moreover it is in contact with the sepsis which always lines the center of the neoplasm and therefore increases the septicity. The presence of a mechanical appliance in the central lumen for any length of time favors ulceration and stricture formation.

The ideal method consists in attacking the growth by a crossfire of radium from without and by tubes inserted into the substance of the growth. Radon tubes which do not require removal and which obviate the danger of loss and irritation are of advantage.

The insertion of these tubes through the oesophagoscope into the growth is more simple than is at first apparent. The tubes are introduced by means of special instruments designed on the principle of the trocar and cannula. At each operation five needles are placed well into the substance of the growth. Their position and the changes in the growth are checked by X-ray examination.

Improvement in swallowing has been considerably better than expected. It usually begins in about a week. Bougies have not been passed nor diathermy used although there are no objections to these procedures. There has been no general reaction nor any immediate mortality. Thirty-five introductions of radon have been made by the author.

Two obvious criticisms to this method of treatment are (1) that possible involvement of mediastinal glands and secondary deposits are not taken into account and (2) only the upper half of the growth can be treated at first.

WILLIAM E SHACKLETON M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Godard H. and Smith P. Hernia of the Posterior Omental Cavity (*Les hernies de l'arrière cavité des épiploons*) *Rev de chir. Par* 1929
xliii 65

Complex hernia of the posterior omental cavity are quite rare. The transmesocolic varieties are produced through an orifice in the transverse mesocolon by an operative or accidental traumatism or an inflammatory or neoplastic lesion. They ascend in the posterior omental cavity and following an upward retrogastric course perforate the gastrophatic ligament and fall in front of the stomach and the large intestine into the great peritoneal cavity. In exceptional cases the hernial mass which has penetrated into the posterior cavity becomes engaged in an orifice of the gastrophatic ligament. It may also return to this large cavity by way of the natural orifice of the retrogastric bursa i. e. the foramen of Winslow.

Godard and Smith discuss also those hernia of invaginated course which penetrate into the posterior cavity through the foramen of Winslow pass behind the stomach and emerge by an orifice in the mesocolon.

These hernia manifest themselves clinically by phenomena of intestinal obstruction. They very soon necessitate surgical operation. In the majority of cases the transverse colon, the stomach and the hernial orifices are deeply buried under the loops of small intestine. In complex transmesocolic hernia which fall in cascades anterior to the stomach and the transverse colon where almost the entire intestinal mass is spread out in the upper portion of the abdomen and completely masks these organs the best course to adopt is to search first for the right or left angle of the colon and the gastric tuberosity.

The authors report the case of a man aged thirty four years who sought treatment for subacute gastric disturbances. X ray examination revealed duodenal stasis. A gastro-enterostomy had been performed three months before on account of gastric pain. Amelioration of short duration was succeeded by pain and abundant bilious vomiting. X ray examination at that time showed pyloroduodenal dislocation and an elongated stomach containing above the bismuth meal a considerable amount of residual fluid. The mouth of the gastro-enterostomy was apparently not functioning. There was also very marked duodenal stasis, and most of the duodenojejunal angle was above the lesser curvature.

When the abdomen was opened nearly the whole mass of small intestine protruded concealing from

view the transverse colon, its omentum and the stomach. The angles of the colon were found. Through a wide breach in the transverse mesocolon the primary jejunogastric anastomosis could be recognized. This breach must have been the portal of entry for the small intestine into the posterior cavity. The loops were lifted to one side toward the gastrophatic transligamentous breach and gently drawn through to the other side by way of the transmesocolic orifice. Whenever traction on a loop of small intestine ceased during the reduction the loop returned to the posterior cavity. After reduction an over-and-over suture was made of the zone near the anastomosis and the edges of the wide transmesocolic orifice until obliteration was complete. The patient left the hospital eighteen days later in excellent condition.

The authors review about fifty cases of transmesocolic hernia reported in the literature. Organic tolerance of these hernia is remarkable. The operative difficulties are not great, and cure has been obtained in nearly all cases. As a preventive measure after gastro-enterostomy the mesocolic orifices should be carefully closed by fixation of the stomach to the peritoneal lips.

In hernia through the foramen of Winslow, strangulation occurs early and is severe. The authors have collected about thirty cases from recent literature. Complex varieties are described.

Mention is made of certain inconstant anatomical formations such as the cystroduodenojejunal ligament and the infrapigelian ligament which by modifying the extent of the orifice of entry of the foramen may create unforeseen operative difficulties. In the majority of cases the position taken by the surgeon must be that taken for operations on the biliary tract. Reduction may be made by simple traction on the infrahepatic intestinal loop. If this does not suffice a finger may be inserted into the foramen to facilitate the liberation by forcing the floor down. In many cases reduction is not possible. The flaccid portion of the lesser omentum should be split and the adhesions between the loops and the peritoneum of the posterior cavity or of the stomach should be freed. One may proceed toward the inferior border of the foramen of the omental bursa. Downward pressure on the hepatic falx by means of the finger is the only maneuver which permits straightening of the intestinal adhesion and reduction by gentle traction at the external orifice of the foramen. This traction should be exerted on the loop situated high in the foramen in contact with the liver since the inferior loop usually adheres to the hepatic falx and is difficult to disengage.

The article is supplemented with a bibliography of nine titles.

Douglas J. Hernia Through the Foramen of Winslow *Ann Surg* 1929 xc 306

The author adds another case of hernia through the foramen of Winslow to the thirty eight he has been able to collect from the literature. His patient was a man fifty three years of age who was seized with severe pain first in the region of the umbilicus and then in the epigastrium. The pain was followed by vomiting which relieved it. Roentgen examination showed a loop of bowel in the lesser cavity. When the abdomen was opened the loop of bowel had returned to the greater cavity but was identified by pressure rings on a loop of ileum 2 ft from the ileocecal valve. The attempt was made to prevent further invasion of the lesser sac by the small bowel by causing the formation of adhesions between the greater omentum and the abdominal wall so that the small intestine could not pass in front of the transverse colon.

W N ROWLEY M D

Lawson G M and Smithwick R H. Gonorrheal Infection of Abdominal Wounds Following Laparotomy. *Ann Surg* 1909 xc 243

Two cases of acute salpingitis simulating appendicitis are reported. An unusual feature in both was secondary infection of the laparotomy wound by the gonococcus. Fever and visible wound infection were present four and five days after the operation. In one case the diagnosis of salpingitis was obvious but in the other it could be made only by bacteriological studies. The wounds were rapidly freed of gonococci by dakinization and treatment with 10 per cent argyrol.

HOWARD A MCKNIGHT M D

GASTRO INTESTINAL TRACT

Ramstedt. Operation for Pylorospasm in Infants. (Zur Operation des Pylorospasmus der Säuglinge). *Zentralbl f Chir* 1909 p 54

Ramstedt states that the war prevented the popularization of his operation but that in spite of this fact more and more internists have come to recognize the advantages of the operation although medical treatment which has made considerable progress in recent years should be tried first. He presents 3 groups of statistics—those of Heile who reported 75 operations with 3 deaths; those of Kirschner who reported 5 operations without a fatality and his own series of 50 operations with 2 deaths which occurred on the sixth and eleventh postoperative days as the result of weakness. The 3 groups comprise 150 operations with a mortality of 3.4 per cent. Ramstedt concludes that medical treatment can do no better and that in some of the cases treated medically the patient's life might have been saved by timely operation.

In the author's technique the abdomen is opened by a median incision 6 cm long beginning below the ensiform process. The stomach is then pulled through the incision and the thickened pylorus is grasped between the index finger and the thumb of

the left hand. On the anterior surface, where the vessels are fewest an incision is made to the beginning of the duodenum. The musculature is then split not with the knife but a blunt pointed lancet like instrument down to the mucosa for a distance of 2 or 3 cm. The blunt dissection of the muscle prevents injury to the mucosa. Hemostasis is obtained by pressure with gauze or several interrupted sutures. The abdomen is then closed and an adhesive tape dressing is applied around the thorax and the upper part of the abdomen.

Whether the musculature is to be divided by blunt or sharp dissection as is done by Kirschner is a matter of choice. However the author is opposed to the Hildebrand-Gohrhandt wedge excision, the Strauss pyloroplasty and the Loretta Nitton dilatation. He performs the operation under ether narcosis.

In the discussion FRIED (Osnabrueck) recommended local anesthesia and stated that he often adds a small transverse incision to the longitudinal incision of the serosa.

ORATOR (Duesseldorf) reported that Schlossmann has also become an advocate of the Ramstedt operation. On von Haberer's service in Duesseldorf it has been done on 14 cases with 1 death from hemorrhage. Immediately after the operation the children are placed again under medical treatment.

SIETTING (Z)

Horsley J S. The Mimicry of the Symptoms of Peptic Ulcer. *Illinois M J* 1909 lvi 97

Horsley calls attention to the fact that the symptoms of peptic ulcer vary greatly and are frequently vague. They depend somewhat on the type and location of the ulcer as well as the type of the individual. They show a marked tendency toward latent periods with comparative comfort followed by acute exacerbations occurring more frequently in the spring and fall. On the basis of the symptoms the cases may be divided into three main types.

In cases of Type 1 the chief complaint is the so called hunger pains which are usually relieved by food, soda, gastric lavage or vomiting. These pains may persist for several months.

In cases of Type 2 the patient is first made aware of trouble by sudden hemorrhage with the vomiting of blood and the passage of tarry stools. In some instances tarry stools and anemia may be the only signs.

In cases of Type 3 the patient has no definite gastric symptoms but complains of discomfort in the lower abdomen and of diarrhea. The appetite is poor and there is a loss of weight.

The three types of symptoms may occur separately or combined.

The exact cause of the hunger pains is still unknown. The work of Cannon, Washburn and Carlson has established definitely that in the normal stomach hunger pains are due to contraction of the gastric muscles. The theory that the pains in cases of ulcer may be due to the hyperacidity accompanying

ing the ulcer finds some support in the observation that patients with an active ulcer experience pains when dilute hydrochloric acid is introduced into the stomach through a tube. However, patients with hypoacidity or even achylia are also subject to typical hunger pains.

Higgins of St Elizabeth's Hospital, Richmond, Virginia, studied the occurrence of hunger pains and food relief in 16 cases with symptoms of digestive disturbance in which an abdominal operation was performed. These included 33 cases of chronic cholecystitis, 47 of chronic appendicitis, 34 of combined chronic gall bladder disease and appendicitis and 46 of peptic ulcer. A finding of interest was the relative frequency of hunger pains in gall bladder disease, appendicitis and duodenal infections. While relief of the pain from the ingestion of food has been generally recognized as a cardinal sign of duodenal ulcer, fewer than one half of the patients with ulcer gave such a history and this sign was present in from 8 to 77 per cent of the cases of chronic disease of the gall bladder and appendix.

Gastrointestinal hemorrhage may not be due to ulcer of the stomach or duodenum. Its cause may be toxic erosions of the mucosa of the stomach or intestine, congestion of the gastric veins, splenic thrombosis, hepatic cirrhosis or ruptured esophageal varices. The author cites a case in which it was due to a degenerating neurofibroma in the hepatic flexure of the colon.

In experimental studies of pylorospasm made on dogs, Huggson noted that there is a tendency toward pyloric spasm following peritoneal injury. This is a reflex spasm, and the paths of the reflex are through the vagus nerve. After inducing pyloric spasm and delayed emptying of the stomach by creating a lesion in the cecum, Huggson caused normal emptying by resecting the vagus nerve. He found that removal of the vagal branches at the mid portion of the stomach has the same effect as severance of the nerve at the point where it enters the stomach. Horsley states that relief of the symptoms has resulted in most of the cases in which he has sectioned the vagus after removing a diseased gall bladder or appendix.

From these observations it is apparent that the symptoms of peptic ulcer are simulated by other lesions and the mimicry may be most confusing. However, the cardinal signs of hunger pains, food relief, and hemorrhage are usually associated with other evidence that leads to the correct diagnosis. In atypical cases of peptic ulcer the diagnosis may require careful clinical observation, thorough laboratory study and X-ray examination.

JOHN W. NIXON, M.D.

Lewisohn R. Safety Factors in Resection of the Stomach for Gastroduodenal Ulcers. *Ann Surg*, 1929, 90: 69.

The typical operation of resection of the stomach performed in the vast majority of cases of gastro-duodenal ulcer removes a little more than one half

of the stomach. It is therefore a partial gastrectomy. In cases of large gastric ulcers and ulcers near the cardia, the dissection must often be carried very close to the cardia and in some instances, from two thirds to four fifths of the stomach must be removed. This extensive resection is termed subtotal gastrectomy. It should be admitted that partial or subtotal gastrectomy is an operation of considerable magnitude. Even in cases treated by experienced surgeons the operative mortality will always be larger than the immediate mortality following gastroenterostomy.

Lewisohn points out some of the factors insuring a greater margin of safety in partial or subtotal gastrectomy. Large crater ulcers located in the second portion of the duodenum and with involvement of the common bile duct and the ducts of the pancreas should not be resected. Ulcers high up at the cardia demand total gastrectomy. This operation has a very high mortality and should be reserved for the carcinomata.

Ulcers on the posterior wall of the duodenum require careful dissection. The pancreas may be injured with consequent pancreatitis and fat necrosis. Duodenal fistulae result from inadequate closure of the cut end of the duodenum. One of the chief factors of safety in any operation is the surgeon's experience. The patient's general condition is also of great importance. Chronic disease of the lungs, heart or kidneys is more of a contraindication to stomach resection than old age. Whenever possible, other anesthesia should be avoided. Patients with pyloric obstruction should be treated pre-operatively by gastric lavage, hypodermoclysis and the administration of fluids by rectum. If necessary, glucose should be administered intravenously and blood transfusions given. The author advocates pre-operative and postoperative blood transfusions when the condition suggests shock or general weakness and debility. They often save life when given at the proper time.

Spinal anesthesia seems superior to general anesthesia and is followed less frequently by postoperative pneumonia. The duration of spinal anesthesia as employed by the author is about fifty-five minutes. As this is not sufficiently long for the Billroth II resection, it is necessary to use nitrous oxide oxygen at the end of the operation. When retention occurs, the stomach tube is employed the first day after the operation.

After six years' experience, Lewisohn is convinced that the end results of partial or subtotal gastrectomy are far superior to those of simple gastroenterostomy with or without excision of the ulcer.

JOHN W. NIXON, M.D.

Buerkle de la Camp H. Perforated Gastric and Duodenal Ulcer (Ueber das durchgebrochene Magen und Zwölffingerdarmgeschwür). *Münch med Wchnschr*, 1929, 1: 453.

In the first six months after Lexer assumed the direction of the Munich clinic, twenty-four patients

were admitted with perforated gastric or duodenal ulcer. In five the perforation was incomplete. Of the nineteen with free perforations three who were admitted in a hopeless state died without operation. Of those operated upon, seven died who had been admitted from seven to forty eight hours after the perforation.

The nature of the operation is determined chiefly by the general condition and the state of the circulation. The most important task is the combating of the peritonitis. In Lever's clinic extensive irrigation with Ringer's solution is done and drainage is established. Gastro enterostomy is not performed in every case but whenever resection is planned an anterior antecolic gastro enterostomy with a Braun entero anastomosis is done. Five of the cases reviewed were treated by primary resection (a Reichel-Pálva operation in one case and to end gastro duodenostomy in one case and end to side implantation of the stomach into the descending limb of the duodenum in three cases). Among these there was one case in which a perforated peptic jejunal ulcer developed following a gastro enterostomy without pyloric exclusion performed two years previously. All of the patients treated by resection recovered.

COLMERS (Z)

Bager B. The Occurrence Clinical Picture and Treatment of Perforated Gastric and Duodenal Ulcers and an Investigation of the Late Results of Various Operative Procedures. (Beitrag zur Kenntnis ueber Vorkommen Klinik und Behandlung von perforierten Magen und Duodenalgeschwulsten nebst einer Untersuchung ueber die Spätergebnisse nach verschiedenen Operationsmethoden) *Acta chirurg. Scand.* 1929, 119, Supp. 31

The author has collected 1767 cases of perforated gastric and duodenal ulcer from 50 hospitals in Sweden which were operated upon by about 100 surgeons during the period from 1911 to 1925. He himself has operated upon 28 cases obtaining a cure in all. He states that particularly since 1919 perforated ulcers have become considerably more frequent but the increase has been noted only among males. Of the total number of patients whose cases are reviewed 27.2 per cent were women whereas of the number treated during the last five years only 19.6 per cent were women. In males the condition was most frequent at about the thirtieth year of age and in females at about the forty fifth year of age. The increase in the frequency of the lesion in recent years was most marked among men between the ages of twenty one and forty.

The mortality in the surgically treated cases was 32.8 per cent. It showed a steady increase with increasing age and with prolongation of the interval between the perforation and the operation. The results of operation have improved considerably the mortality having been reduced from 41 per cent in the first five year period to 35.3 per cent in the second and to 27.1 per cent in the third. This improvement has been due chiefly to the fact that patients have recently been coming to operation earlier but

has been brought about also by improvement in the operative technique.

About two thirds of the ulcers in the cases reviewed occurred in the stomach and one third in the duodenum but the duodenal and juxta-pyloric ulcers (distal perforations) together constituted about two thirds of the total number of lesions and the ulcers of the sacculus digestorius and the rest of the canalis egestorius (proximal ulcers) constituted one third. The incidence of proximal perforations was about the same in men and women whereas that of distal ulcers was much greater in men. In both men and women proximal ulcers were most frequent at about the forty fifth year of age. Distal ulcers were most frequent at about the same age in women, but at about the thirtieth year of age in men. It was almost entirely the distal perforations that caused the marked increase in frequency of perforated ulcer during recent years.

In the cases of most women and in those of men with proximal perforations the history was more often long than short. The short histories were given most frequently by men with distal ulcers. Cases with short histories have become more frequent in the course of time than those with long histories.

All of these facts with regard to the site, sex and age incidence, frequency, and history of the lesion point to the occurrence of two types of perforations—proximal perforations which occur with about equal frequency in men and women and distal perforations which are most frequent in younger men.

It is possible that the increased use of tobacco is an important factor in the increased frequency of perforated ulcers in younger men.

With a view to determining the value of different methods of operation, the author made a detailed study of the 1495 cases included in the main group. Of 681 patients treated merely by suture of the perforation 36.4 per cent died. In 616 cases in which suture of the perforation was supplemented by gastro enterostomy the mortality was 23.4 per cent. In 84 cases in which resection was performed the mortality was 25 per cent. In 111 cases in which only tamponade or drainage was done the mortality was 68.5 per cent. The poorer results of simple suture as compared with gastro enterostomy were due undoubtedly to the fact that the patients treated by suture were in worse condition.

The results in the cases treated by suture would not have been improved by gastro enterostomy, but in the cases treated by gastro enterostomy the mortality would probably have been somewhat lower if the suture method had been adopted.

The relatively low mortality in the cases operated upon by resection was explained by the patients' better general condition. There is every reason to conclude that the mortality in these cases would have been very much less if the radical procedure had not been chosen.

The material reviewed included 31 cases of perforated jejunal and gastrojejunal ulcers. Such lesions may occur after resection of the stomach. The

author reports also cases not operated upon of which 2 were diagnosed roentgenologically from the demonstration of free gas in the abdomen.

At the Maria Hospital in Stockholm a special operative method has been employed fairly routinely during the last ten or fifteen years—lengthwise excision of the ulcer crosswise suture irrigation of the abdominal cavity gastrostomy and primary closure without drainage or tamponade. In 78 cases thus operated upon the mortality was only 11.5 per cent, and in 45 cases operated upon within six hours after the perforation there were no deaths. The favorable results were probably due partly to the fact that most of the patients came to operation early and were partly attributable to the conservative method used.

However a study of the total number of cases indicates that irrigation of the abdominal cavity did not improve the results. In cases in which the cavity was only sponged dry the mortality was 24.4 per cent whereas in those treated by irrigation it was 41.4 per cent. Grouping of the cases with reference to the length of the interval between the perforation and operation shows poorer results after irrigation, also in the late cases.

The cases reviewed demonstrated the importance of primary closure of the abdomen as far as possible. The mortality in cases with primary suture was 21.1 per cent, whereas in the cases with drainage it was 35.9 per cent. It is evident that primary closure is done more frequently in early cases and that late cases with widespread peritonitis and a large amount of exudate call for drainage but in all the interval groups the same disadvantages of drainage were evident.

The method by which the abdominal cavity is cleaned—irrigation or sponging—plays no definite part in the production of postoperative abscesses but such abscesses seemed to develop somewhat more frequently in cases with drainage than in those with primary suture.

To determine the late results of operations for perforated ulcer the author sent out a questionnaire. He obtained data regarding 684 patients who had been treated at least a year previously. Three hundred and eighteen were treated by simple suture, 325 by gastro-enterostomy and 41 by resection. It was found that primary gastro-enterostomy gave the best late results with cure or improvement in 80.9 per cent of the cases. The next best results—cure or improvement in 80.5 per cent of the cases—were obtained from resection. The least favorable results—cure or improvement in only 54.3 per cent of the cases—were those of simple suture.

If the further fate of patients with severe recurrence is determined it will be found that the ultimate results of the suture method are considerably better. A great number of the patients treated by this method recover completely or are greatly benefited by another operation or an ulcer cure, and the risk of the second laparotomy is no greater than in cases of ordinary ulcer without perforation. Of the

patients who developed a severe recurrence after gastro-enterostomy relatively fewer were benefited by further treatment. In such cases a second operation was associated with very much greater risk the mortality being no less than 29.4 per cent. The greater risk is evidenced also by the fact that surgeons are less prone to operate in cases of recurrence following gastro-enterostomy as compared with cases of recurrence following suture. In cases of recurrence following resection the prognosis is still less favorable and the mortality is higher. In general it may be said that recurrences are more frequent after the suture method than after the other procedures but after suture the importance of recurrence is far less serious and the chance of benefit is greater.

Patients with no ulcer symptoms before the perforation stand a considerably greater chance of remaining well even after simple suture. The risk of recurrence increases in proportion to the duration of previous ulcer symptoms but even patients with a long history of severe ulcer symptoms often remain perfectly well after only suture of the perforation. Following all operative methods recurrences usually develop within the first few weeks or months after the perforation. The longer the time that has elapsed since the perforation and operation the less the danger of recurrence and the greater the chance for a lasting cure.

The author concludes that the treatment of choice consists in simple suture preferably after excision of the ulcer sponging of the abdominal cavity, gastrostomy and primary suture of the abdomen. The danger of a fresh perforation or cancer is so slight that it need not be given consideration in the choice of operation. At any rate it is no greater than the risk of peptic jejunal ulcer after gastro-enterostomy or resection.

Haudek M. The X Rays in the Diagnosis of Early Carcinoma of the Stomach. *Brit. M. J.* 1929 II, 173.

Next in frequency to cardiovascular disease as a cause of death is cancer and the most common of fatal cancers is cancer of the stomach. Early X ray examination is therefore extremely important in all cases in which a cancer of the stomach is suspected. Haudek maintains that by a sufficiently precise examination supported by sufficient experience roentgenologists are now in a position to establish at an early stage and with a considerable degree of certainty whether a cancer is present in the stomach or not. The results of the examination are dependent far more on the skill of the roentgenologist than on the quality of the apparatus. Haudek outlines his method in detail. *Samuel Kahn, M.D.*

Anschuetz W. Palliative Resection of Gastric Cancer (Ueber die palliative Resektion des Magen Carcinoms). *Deutsche Ztschr. f. Chir.* 1929 CCXV, 1.

In the follow up study of 320 patients subjected to gastric resection for cancer in the Kiel clinic during the period from 1901 to 1927 the cases were

classified into 3 groups. The first group comprised those of easily resectable carcinoma without adhesions the second group, those with adhesions in which it was necessary to remove portions of neighboring organs (colon liver pancreas) with the tumor mass and the third group those in which it was definitely stated on the history sheet that metastases were left behind and the operation was only a palliative resection.

The mortality was highest about 46 per cent in Group 2. With regard to Group 3 the author states that the description of the operation as a "palliative" resection is subject to criticism as a macroscopic examination was not always made of lymph nodes and other suspected tissues left behind the diagnosis often being based upon macroscopic methods. The classification was dependent entirely upon the operator's opinion.

In the Kiel clinic the average duration of life has not been lengthened by gastro-enterostomy (140 cases treated by this operation in the period from 1910 to 1920). Therefore the palliative resection has gained ground even though in cases belonging to Groups 2 and 3 operative interference is still resorted to with reluctance. While palliative resection has an operative mortality equal to that of gastro-enterostomy it considerably prolongs life.

An important result of the examination of the resected specimens was the finding that the clinical classification of the cases into the 3 groups is good only for the first year of the disease. The problem of cure of gastric cancer is therefore not entirely surgical but also biological. As many metastases may heal following the palliative resection. Anschutz also recommends this operation.

From the statistics collected by the author it appears that the metastases left behind which undergo healing are those of lymph nodes omentum mesocolon and peritoneum. Lymphomatous metastases seem to be uninfluenced by the palliative resection.

The end results in Group 3 (palliative resection) approach those in Group 1. Therefore even in cases of small carcinomata which can be easily resected the end result may prove disappointing while a palliative operation may give a comparatively good result. On the other hand in the cases in Group 2 the end results have nearly always been better than those obtained in the cases in Group 1 which seemed at first to have the more favorable prognosis.

With regard to the length of life after operation the author states that the pre-operative duration of the disease and the microscopic picture (Konietzky) are of less importance than the site of the lesion. Corpus carcinomata have a more favorable prognosis than carcinomata of the pylorus. This explains the better operative results in cases in Group 2 in which the former predominate. Of 57 patients treated for carcinoma of the pylorus 5 lived more than five years whereas of 35 treated for carcinoma at a distance from the pylorus 7 lived more than five years.

In summing up, the author comes to the conclusion that not a few resections of gastric carcinoma are palliative but they nevertheless result in an average prolongation of life equal to that obtained by apparently radical operations. However, a truly permanent cure is to be obtained only by complete radical removal. HELLNER (Z)

Cutting R. A. The Relation of the Adrenal Gland to the Toxæmia of Intestinal Obstruction. An Experimental Study. *Arch Surg* 19 9 115 27.

There is general agreement among investigators that the intestinal contents of animals with intestinal obstruction contain a toxin which is not found in the contents of normal intestines. This presents fairly definite physical and chemical properties and when injected intravenously into normal animals is capable of producing the clinical picture of intestinal obstruction with ultimate death. This toxin is soluble in water and is not destroyed by boiling. It is precipitated by five volumes of alcohol and by about 60 per cent ammonium sulphate. It is not destroyed by exposure to pancreatic ferment for several days and it does not pass through a collodion membrane when dialyzed against distilled water.

The author was led to investigate the relation of the adrenal glands to the toxæmia of intestinal obstruction by the discovery of characteristic changes in those glands in animals dying of intestinal obstruction. His experiments were carried out on rabbits. Half of the toxin derived from the intestinal contents and mucosa of an animal with an artificial obstruction was injected into rabbits that had been subjected to bilateral adrenalectomy and the other half into control rabbits. Both groups of animals were then kept under observation until death or until the effect of the toxin had disappeared.

The results were conclusive. Both groups of animals showed the symptoms of intoxication—weakness tremors dilatation of the pupils diarrhoea, and tenesmus—but the controls invariably showed a much more severe reaction than the animals subjected to adrenalectomy. In the latter the manifestations were mild. However the control animals all survived indefinitely whereas the adrenalectomized animals all died within twelve hours in spite of the apparently mild character of their reaction.

The author concludes that as the adrenals undergo degenerative changes in intestinal obstruction the treatment must be instituted early and must be aimed at the removal of the toxic products from the obstructed intestinal loops before the degenerative changes in the cortex of the adrenals have become extensive. ANTHONY F. SAYA, M.D.

Sailer J. Laws G. M. and Elman J. Fatal Infection of the Intestines with *Bacillus Aërogenes Capsulatus*. *Am J M Sc* 1929 cxxxv 309.

The infection in the case reported was characterized by marked prostration hypotension the passage of loose stools with a peculiar odor and a

leucocytosis of 23,000 without fever. Autopsy revealed an acute ulcerative ileocolitis. Bacteriological examination of the area of inflammation disclosed large numbers of gram positive bacilli with blunt ends. The authors attribute the fatal outcome to the absorption from the intestines of bacillus welchii toxin. M. HERBERT BAAXER M.D.

Evans A. Developmental Enterogenous Cysts and Diverticuli. *Brit J Surg* 1929, xvii 34

The author was led to make a thorough study of enterogenous cysts and diverticula by the discovery of an unusual type of ileocecal cyst at operation on a man twenty nine years of age who had experienced cramp like pains in the abdomen over a period of a week.

In Evans opinion all cysts with the structure of gut which are found in the abdomen in the thorax, or at the umbilicus are derived from the primitive intestinal tract and are developmental enterogenous cysts. They originate either in the vitello-intestinal tract or in the diverticula found in the developing ectoderm of the embryo as described by Kibel, Lewis and Theng. Some of these developmental diverticula persist as diverticula and increase in size.

Instances are cited of enterogenous cysts which originated in developmental diverticula situated in those segments of the primitive intestinal tract which later became the esophagus, stomach, duodenum, jejunum, ileum, ileocecal region, vermiform appendix or sigmoid, also instances of enterogenous cysts which originated in some unobliterated portion of the vitello-intestinal tract.

The great variety shown in the structure of the inner lining of these cysts is in some cases accounted for by intracystic pressure, in others by inflammatory changes and in many by an error in the differentiation of the lining cells resulting in heteromorphosis of the epithelium.

Evans believes it probable that all epithelial misplacements of the intestinal tract whether occurring in enterogenous cysts in developmental diverticula or as superficial and deep heteromorphoses of the intestinal tract, originated in the diverticula which are found in the developing ectoderm of the embryo. GEORGE A. COLLETT M.D.

Hayes R. and Shaw, A. B. Intermittent Duodenal Stenosis. *Radiology* 19 9 xiii 245

When the mesentery is short and there is ptosis of the small intestine the mesenteric root containing the superior mesenteric artery may exert a sufficient drag to cause compression of the duodenum over which it passes. In the presence of right sided ptosis the colica media which supplies the right colon may cause similar compression.

In cases of intermittent duodenal stenosis there is usually a history of gastric disturbances of long duration often since childhood. Periodical so called 'bilious attacks' with nausea and vomiting resembling typical migraine, are very common and

most significant. The attacks begin with constipation and are frequently accompanied by headache. They occur three times as frequently in females as in males and are most common between the ages of twenty and forty years. They may occur also in children. Relief is often obtained from a certain posture. This is especially apt to be the case when the occlusion is caused by the mesenteric root. The condition may be accompanied by a loss of weight and strength, mental and physical depression, disturbance of the heart action, coldness of the extremities, a low blood pressure, a subnormal temperature and other evidences of duodenal intonation. When such symptoms persist over a long period of time the physician may gain the impression that he is dealing with a gastric neurosis.

In all of the authors series of forty eight cases a complete examination was made. In the cases of adults the Graham dye test of gall bladder function was carried out. Nineteen of the patients were operated upon but no pathological condition other than that produced by membranes or mesenteric pressure was found.

The cause of the duodenal intonation is not definitely known but it is believed that toxic substances are produced in the dilated stenosed loop of duodenum by proteolytic bacteria.

The treatment should be undertaken only by one who is familiar with the mechanics of the condition and has thoroughly studied the X ray findings. Diet is most important as a gain in weight is essential to relief of the symptoms. Carbohydrates, fat, milk, fat and sugars should be forced. Olive oil should be given before meals. Bed rest for a period of several weeks with the foot of the bed elevated about 10 in. and the patient lying on his stomach or right side for an hour after each meal will quite promptly relieve the drag on the jejunum at the ligament of Treitz. The use of cathartics is to be avoided. When the patient gets out of bed he should wear a properly fitting belt. The problem is essentially a medical one. Duodenojejunostomy should be reserved for the more severe cases which are not relieved by postural and dietetic treatment. The authors experience with caecal plication and fixation or colopexy has not been encouraging.

JOHN W. NEATH M.D.

Fahr T. Niche Formation in the First Part of the Duodenum and Its Relation to Duodenal Ulcer. (Ueber Nischenbildung im Anfang teil des Duodenums und ihre Beziehungen zum Ulcus duodeni). *Mitt u d Gren geb d Med u Chir* 1929 xli 218

The position of the duodenal bulb as the transition between the stomach and intestine is manifested by the characteristics of the wall structure especially the shape of the muscle bundles. These cause niche formations on the duodenal side of the pylorus which at times are small and flat and at other times are deep like diverticula. To determine their relationships more exactly, fifty stomachs were studied. In half of them there were niches due to

cicatrizing or healed ulcers and in the other half simple niches. After exact localization of the affected part with needles the stomach was resutured filled with barium, X rayed in a favorable position and then opened again and examined microscopically.

No noteworthy differences were found between the various types of diverticula. Small niches may cast shadows exactly like those of ulcers and quite large ulcers may show flat sacculations such as are found in the large niches of the duodenal bulb.

Fahr attributes niche formation to a relationship between the morphological characteristics of the bulbus duodeni and functional influences arising in the muscularis mucosae. The theory that the condition develops gradually in the sense of pulsion diverticula is supported also by the fact that it is most common after the fiftieth year of age.

The differential diagnosis between acquired and congenital diverticula is facilitated by the fact that the latter occur more frequently low down in the duodenum near the papilla of Vater. Moreover congenital diverticula always have steeply inclined sides in contrast to the acquired type which have overhanging borders. In those of the acquired type, microscopic examination shows a rich development of the musculature in the borders.

Spastic conditions of the muscularis propria do not necessarily lead to ulcer formation. In spasm of the muscularis mucosae conditions are considerably more favorable for ulcer formation because of the squeezing of the blood vessels. DAVZOG (Z)

Bule L. A. and Swan T. S. Benign Tumors of the Colon. *Surg Clin N Am* 1929 ix 293

The authors review 52 cases of benign colonic growths seen at the Mayo Clinic in the period from 1905 to 1926. The incidence and location of the tumors are first considered. The authors believe that such neoplasms will be discovered more frequently as methods of diagnosis are improved. Of 1073 patients subjected to proctoscopic examination in the period from 1924 to August 15, 1928, polyps were found in 455 (23.8 per cent). The authors exclude rectal growths from their discussion. They point out however that benign tumors affect the rectum more frequently than the entire remaining portion of the intestinal tract.

The tumors reviewed are grouped pathologically as follows:

1. **Adenomata.** Nineteen of the 52 tumors were simple adenomata, the pathological structure of most polyps. This group would have been much larger if present day diagnostic measures had been used in the years from 1905 to 1922. Many adenomata remain asymptomatic until they attain sufficient size to cause interference with the mechanical function of the bowel when they may cause invagination or intussusception with consequent obstruction or until their presence is complicated by ulceration, necrosis or strangulation. The authors regard these growths as potentially malignant and therefore advocate

their early eradication. They point out their frequent association with other lesions. When the tumors are situated high in the rectum or sigmoid they make a special search for carcinoma and diverticulitis.

2. **Adenofibromata.** There were 2 adenofibromata in the cases reviewed. These are essentially adenomata with a large fibrous stroma.

3. **Fibromata.** One fibroma was observed. The authors discuss also 4 others, the only ones reported in the literature up to March, 1927.

4. **Lipomata.** Eight of the tumors in the cases reviewed were true lipomata. Of the 2 which were found at autopsy one is described as lipomatosis of the entire colon and rectum and the other as lipomatosis of the mesentery of the sigmoid. In 5 cases the tumor had its origin in the submucous coat. In all of the latter there was a history of abdominal pain, in 4 a history of bleeding, and in 3, a palpable mass in the abdomen.

5. **Adenomyomata.** Five adenomyomata were found. All were in the sigmoid. In no case was the tumor secondary to a similar process in the uterus.

6. **Hæmangiomata.** Two tumors of this type are described, one a simple hæmangioma, and the other a hæmangioma of the cavernous type.

7. **Polyps.** Excluding the type of polyposis associated with chronic ulcerative colitis and malignancy, 13 cases of polyposis were found. The cardinal symptoms—abdominal pain, bleeding and diarrhoea—are discussed. The authors agree with the majority of observers that the disease appears most frequently in the lower bowel segments. They suggest that the cause is some form of persistent irritation setting up a focus hyperplasia of tissue with healing on either side and giving rise to a slow metamorphosis from the stage of increased prominence of the folds of the mucous membrane to that of true polypoid formation.

8. **Cystic tumors.** There were 2 cystic tumors in the cases reviewed. The first the authors believe was a serous mesenteric cyst of the ascending colon and small intestine and the second a congenital ileocaecal or mucous cyst.

Warren R. The Complications and Mortality of Appendicitis. *Lancet* 1929 ccxvii 16

The author reviews American and English literature on appendicitis and tabulates his findings in 1072 cases of the condition.

The chief factors affecting the mortality are the period at which the condition developed, the patient's age and the complications. The author is convinced that the period immediately following the war was attended by a definite increase in the mortality. He accounts for this by assuming that resistance was materially lowered by influenza and poor nutrition. The mortality is greatest in infancy and old age. It is appreciably increased by associated conditions such as myocardial degeneration, pulmonary embolism and other serious conditions. The most important direct complica-

tions increasing the mortality are peritonitis in intestinal obstruction and a combination of the two. In the author's 1072 cases there were 107 with direct complications and of the latter 44 were fatal. Intestinal obstruction may be primary but is usually secondary or postoperative.

As treatment the author favors operation in all cases in all stages. **E. L. Garside, M.D.**

Pope, C. E. and Judd, E. S. The Arterial Blood Supply of the Sigmoid, Rectosigmoid and Rectum. *Surg. Clin. N. Am.* 1929 ix 957

The region of the rectosigmoid extends from the so-called critical point half way down the rectum. It is a region peculiar in the type of arteries to the wall of the bowel. There are from one to five of these arteries. They may originate from the superior hemorrhoidal artery above at or below its point of division at the third sacral segment. They parallel the superior hemorrhoidal artery and on entering the wall of the bowel have laterally spreading branches.

The so-called critical point is always the point of origin of a rectosigmoid artery, the first recto sigmoid artery.

The upper half of the rectum is always supplied by the rectosigmoid arteries for the main part of its right and left lateral and anterior aspects and part of its posterior aspect.

The region of the rectosigmoid may be determined from its arteries. At the time of operation it may be recognized from the constancy in length of the inferior mesenteric superior hemorrhoidal artery which bifurcates or trifurcates at approximately its median zone.

The lower part of the bowel has a much more adequate blood supply than has been realized. In the intact bowel there is a dependency of circulation that may occur from below up as well as from above down, there being a considerable intimacy of anastomosis between the systemic and splanchnic systems of vessels. It was found that instead of a single middle hemorrhoidal artery on either side there are always three and sometimes five on either side. These originate from the anterior branch of the hypogastric artery and the internal pudic artery in its downward course and supply the lower part of the rectum. There may be also from two to four inferior hemorrhoidal arteries from the internal pudic artery on either side. It was found also that in the lower half of the rectum a fine system of retrorectal vessels connect the middle sacral and lateral sacral arteries with the gluteal arteries and the hemorrhoidal arteries. Some of the gluteal branches assume a size sufficient to warrant the application to them of the term 'middle hemorrhoidal arteries' and act like such arteries.

The more important surgical indications gained from this study seem at the present time to be: (1) wide resection of the lower part of the colon and rectum to include the region of the rectosigmoid, (2) definition of the rectosigmoid and its identification

by knowledge of its arterial blood supply, (3) preservation of as much as possible of the pelvic mesocolon pattern and (4) high ligation of the inferior mesenteric artery. The finding demonstrates the safety of leaving a low lying rectal stump for anastomosis or other purpose because of the dependency of circulation from below upward and they show that the size of the mesocolon is not indicative of the arterial pattern.

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Douglas reports a case of tumor of the sigmoid with symptoms of obstruction. No blood was found in the stools. A first stage Mikulicz operation was done with resection of the growth and 12 in. of the intestine. The tumor was situated on the mesenteric side of the sigmoid. There was no ulceration of the mucosa. Six days after the removal of the neoplasm a clamp was applied to the spur. The colostomy was closed three weeks later. Microscopic examination showed the tumor to be made up of endometrial tissue. The findings suggest that it had its origin in an embryonic rest.

W. V. Rowley, M.D.

Lockhart Mummery, J. P., Harris, H. A., Naunton, Morgan, C. I. and Others. Discussion on Fistula in Ano. *Proc. Roy. Soc. Med., Lond.* 1929 xiii 1337

LOCKHART MUMMERY stated that operations for fistula in ano were mentioned in the very earliest records of surgical literature and that among the instruments unearthed at Pompeii there were several for the performance of such operations.

The records of St. Mark's Hospital, London show a steady decrease in the number of cases of anal fistula since 1909. The primary cause of the condition is an abscess in the tissues surrounding the rectum which bursts into the rectum externally, or in both directions. Such an abscess may be due to a congenital cyst, a foreign body, a fissure, an ulcer, suppurative of the glands, or tuberculosis.

The treatment of anal fistula is surgical. While the condition is generally regarded as difficult to cure, the principles of treatment are now well established. The purpose of operation is the establishment of free drainage to all parts of the tract. Adequate drainage is essential during the entire period of healing. In cases of large fistulae and deep tracts it is not always possible to establish free drainage to all parts of the tract without risk of causing incontinence. It is better to perform a second operation to re-establish drainage than to produce incontinence. All of the tracts should be incised and laid freely open. In cases of multiple fistulae complicated by many side tracts which are difficult to reach, it is best to operate in two stages, dividing and draining all of the side tracts first and then dividing the main tract or reversing this procedure. If the operation is planned along these lines there will be little danger of causing incontinence.

The belief that the main tract always lies deep to the external sphincter and that its division will involve cutting of the muscles is erroneous. In only about one third of the cases is this true. The external sphincter should never be completely cut across at the primary operation. The advantage of postponing the division of the muscle for two weeks is that by the end of that time the muscle will be firmly held in the surrounding fibrous tissue and the ends will not retract when the muscle is divided. As the external sphincter is attached both behind and in front division of the muscle at these sites is not as dangerous as lateral division. The internal sphincter is of no importance in the continence of the anal opening.

In cases of tuberculous fistula treatment must be along conservative lines. It is useless to expect healing in the presence of active tuberculosis. The case should be treated as one of tuberculosis, not one of fistula. Local treatment should be entirely subordinate to general treatment. When the patient has acquired good general resistance the fistula can be treated in the usual way. Complete excision of all diseased tissues should be done whenever it is possible in order to avoid the risk of relighting the infection. Probably more reputations have been damaged by the unsuccessful treatment of cases of fistula than by excision of the rectum or gastro enterostomy.

HARRIS described some of the processes involved in the normal development of the embryo. He suggested that the parent tube such as the oesophagus, duodenum or rectum is endowed with two potentialities: the one a result of the compensatory epithelial proliferation leading to occlusion and subsequent intra epithelial cyst formation and the other the result of a comparative poverty in the development of the muscle layer leading to subsequent diverticulosis. In the case of the rectum the embryological processes throw considerable light on the genesis of certain cases of fistula in ano.

NALTON MORGAN reviewed 100 cases of infection around the rectum and anus which were treated at St. Mark's Hospital. He stated that 46 per cent of fistulae pass radially into the bowel. Fistula is most common after the thirtieth year of age. About 56 per cent of ischio-rectal abscesses communicate with the bowel and are or will become complete fistulae. If the original abscesses are treated thoroughly, only 14.2 per cent recur as fistulae. Fifty-one per cent of fistulous tracts are superficial to the external sphincter and about 13 per cent pass deep to the external sphincter. Fifteen per cent pass through the external sphincter. A tuberculous fistula will heal rapidly and well if the patient's general condition is good and there are no signs of active pulmonary disease. Primary suture was done in only 3 of the cases reviewed and in 2 it broke down. Foreign bodies were present in about 4 per cent of the cases. In 8 per cent there were haemorrhoids. A fissure was present in 7 per cent and inflammation of a crypt in 10 per cent. JOHN W. NICHOLSON, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Michelsohn II. A Report on 712 Gall Stone Operations with Special Reference to the End Results (Bericht ueber 712 Gallensteinoperationen mit besonderer Beruecksichtigung der Dauerresultate). *Deutsche Zeitschr. f. Chir.* 1929 CCXIV 150

In the clinic at Kiel, in the period from 1913 to 1925 712 patients were operated upon for disease of the biliary passages and its sequelae (exclusive of those operated upon for recurrence and for malignant tumors of the bile ducts). The operations were as follows: 422 cholecystectomies with a mortality of 3.3 per cent; 58 cholecystectomies with drainage of the common and hepatic ducts by means of a T drain after the method of Kehr with a mortality of 11 per cent; 20 cholecystostomies with a mortality of 30 per cent; 3 lancements of an abscess, with 1 death, and 9 rarer operations with 4 deaths. More than half of the patients came to operation after the fortieth year of age. By far the greater number were females.

Immediate operation was not performed routinely in cases of gall stone attacks. If possible surgical intervention was delayed until the acute symptoms had subsided under conservative therapy (bed rest, the application of an ice bag, regulation of the diet, and treatment with atropin and magnesium sulphate). On the other hand, when signs of peritoneal irritation appeared and the patient's condition became worse with an increase in the icterus, operation was done as soon as possible.

Absolute indications for operation are presented by signs of severe inflammation of the gall bladder with involvement of the peritoneum by empyema, hydrops and by chronic recurrent cholelithiasis. In cases of acute occlusion of the common duct with out fever operation should be performed after two or three weeks if by that time the jaundice has not receded (operative mortality in early cases 6.6 per cent in late cases 36 per cent). In cases with symptoms of cholangitis operation should be done as soon as possible (operative mortality in early cases, 23.7 per cent in advanced cases 50 per cent).

Of the 712 patients operated upon at the Kiel clinic 7.1 per cent died immediately following the operation—7 after an interval operation and 44 after an operation performed during an acute attack. The 44 cases in which death followed an operation performed during an acute attack are reviewed in detail. The 7 deaths resulting from an interval operation were due to operative mishaps.

In 5 of the 16 cases in which an operation was performed for recurrence the first operation was a cholecystostomy. In 3 of these 5 the second operation was necessitated by a persistent biliary fistula, in 1, stones were removed from the gall bladder and biliary duct, and in 1 the second operation was a cholecystectomy. Of the remaining cases of re-operation, the secondary intervention was necessitated in 3 by a stone in the common bile duct which had not been removed in the previous operation, in 1 by an

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In the clinic at Kiel, in the period from 1913 to 1925, 712 patients were operated upon for disease of the biliary passages and its sequelae (exclusive of those operated upon for recurrence and for malignant tumors of the bile ducts). The operations were as follows: 422 cholecystectomies, with a mortality of 3.3 per cent; 258 cholecystostomies with drainage of the common and hepatic ducts by means of a T drain after the method of Kehr, with a mortality of 11 per cent; 20 cholecystostomies with a mortality of 30 per cent; 3 lancements of an abscess, with 1 death, and 9 rarer operations with 4 deaths. More than half of the patients came to operation after the fortieth year of age. By far the greater number were females.

Immediate operation was not performed routinely in cases of gall stone attacks. If possible, surgical intervention was delayed until the acute symptoms had subsided under conservative therapy (bed rest, the application of an ice bag, regulation of the diet and treatment with atropin and magnesium sulphate). On the other hand, when signs of peritoneal irritation appeared and the patient's condition became worse with an increase in the icterus, operation was done as soon as possible.

Absolute indications for operation are presented by signs of severe inflammation of the gall bladder with involvement of the peritoneum, by empyema, by hydrops and by chronic recurrent cholelithiasis. In cases of acute occlusion of the common duct without fever operation should be performed after two or three weeks if by that time the jaundice has not receded (operative mortality in early cases 6.6 per cent, in late cases 36 per cent). In cases with symptoms of cholangitis, operation should be done as soon as possible (operative mortality in early cases, 23.7 per cent, in advanced cases 50 per cent).

Of the 712 patients operated upon at the Kiel clinic 71 per cent died immediately following the operation—7 after an interval operation and 44 after an operation performed during an acute attack. The 44 cases in which death followed an operation performed during an acute attack are reviewed in detail. The 7 deaths resulting from an interval operation were due to operative mishaps.

In 5 of the 16 cases in which an operation was performed for recurrence the first operation was a cholecystostomy. In 3 of these 5 the second operation was necessitated by a persistent biliary fistula, in 1 stones were removed from the gall bladder and hepatic duct and in 2, the second operation was a cholecystectomy. Of the remaining cases of recurrence, the secondary intervention was necessitated in 3 by a stone in the common bile duct which had not been removed in the previous operation, in 1, by an

encrusted linen suture in the common duct, in 1, by adhesions, in 1 by liver abscess and in 4 by stricture of the common duct. In 1 case nothing abnormal was found at re-operation (spasm?).

Of the 772 patients 53.3 per cent were followed up. Sixty nine and six tenths per cent were entirely free from symptoms and 24.8 per cent complained only of transitory pain in the epigastrium or mild drawing pains in the operative scar. Accordingly 93.2 per cent are to be considered able bodied. In 5.8 per cent the results were unsatisfactory.

No relationship could be determined between the end result and the patient's age at the time of the operation or the duration of the disease. However when the cases were studied from the anatomico-pathological standpoint it was found that in cases of stone in the common duct or dilatation of the common duct poor results were nearly twice as numerous as in cases without involvement of the common duct. Of the 22 cases of poor results the residual symptoms were ascribed in 5 to chronic pancreatitis, in 5 to adhesions and in 1 to cholangitis. In 6 cases (operation and convalescence uneventful) colicky pain recurred with its pre-operative severity, but the cause could not be determined.

The author discusses the etiology, prophylaxis and treatment of recurrences. He states that recurrence of symptoms may be caused by true recurrence of stones, but no unquestionable case in which this occurred has been observed. On the other hand, in 5 cases the recurrence of symptoms was found to be due to stones left behind at operation. Stones are especially apt to be missed when the bile passages are filled with fine gravel or sand. To facilitate the escape of missed stones from the deep bile passages Hofmeister has recommended probing through the papilla of Vater with metal bougies. Besides this dilatation of the papilla of Vater, use is made of the T drain. This drain is clamped off from four to eight days after the operation and removed twenty four hours later.

Adhesions may also cause symptoms suggesting recurrence. Cholangitis may produce symptoms which can scarcely be differentiated from those of gall stone attacks. In such cases good results may be obtained from the introduction of from 20 to 40 c cm of magnesium sulphate into the duodenum through the duodenal tube. Scars and strictures of the common duct may lead to recurrence and chronic pancreatitis may run its course with the picture of gall stone attacks. There are also cases in which recurrence of the pain must be ascribed to spastic phenomena in the biliary system. For these atropin and magnesium sulphate are recommended. Such cases should not be treated surgically. Korr (2)

Chamberlain D. Cholecystectomy *Surg. Gynec. & Obst.* 1929 xlv 181

Rowlands R. P. Choledochotomy *Surg. Gynec. & Obst.* 1929 xlv 186

Chamberlain states that in cholelithiasis medical treatment can do no more than keep the patient

comfortable. An infected gall bladder left *in situ* is a menace to the general health and may give rise to fatal complications. Chamberlain believes that carcinoma of the gall bladder never occurs in the absence of irritation due to gall stones. He attributes a large part of the mortality of cholecystectomy to prolonged medical treatment during which liver damage results from the continuous absorption of toxins or back pressure from a stone impacted in the common bile duct. The mortality is the mortality of delay.

Both Chamberlain and Rowlands emphasize the importance in biliary surgery of the recognition of variations and anomalies of the duct and arterial systems. They prepare the patient for operation by a few days of hospital rest, blood tests, the removal of foci of infection and the free administration of water and glucose. At operation both authors elevate the costal margin for better exposure of the liver and use the right paramedian incision. Chamberlain regards it as rarely necessary to open the common duct for exploration, but Rowlands advises incision and probing in most cases. It is agreed that the abdomen should be thoroughly explored and the appendix routinely removed. If stones are palpated within the common duct it is best to milk them into a readily accessible area before an incision is made. The hepatic ducts and the ampulla of Vater should be probed. Rowlands advises dilatation of the latter for better drainage. Both authors recommend that gauze be passed into the duct to wipe out any small fragments of calculi. Drainage should be established by two tubes, one leading from the hepatic ducts and the other from the lower end of the common duct. These tubes should be sutured to the edge of the duct wound and also to the skin of the abdominal wall and left in place for fourteen days or longer. Morrison's pouch should also be drained preferably through a stab wound. Supraduodenal choledochotomy is preferable to retroduodenal or transduodenal choledochotomy.

In removing the gall bladder, Chamberlain uses blunt dissection of the ducts. He ties the cystic duct 2 mm from its junction with the hepatic or common duct and brings the ends of the ligatures out through the abdominal wall. He carbolizes the stump of the cystic duct and ligates the cystic duct separately.

With regard to the after treatment, both authors advise a moderate Fowler position and the administration of glucose by rectum. Chamberlain sometimes administers glucose through the tube that leads through the common duct into the duodenum. In Rowlands' cases water is given freely by mouth from the beginning and the diet is rapidly increased so that a full diet is generally given in small meals on the fourth day.

Rowlands calls attention to the fact that unless care is taken in placing the drainage tubes, extravasation of bile may occur into the greater or lesser peritoneal cavity. Recurrence of colic may be due to spasm of the duct around the tube or the presence of a blood clot, stone or debris in the lumen of the

duct Remittent or intermittent fever is usually due to cholangitis. Anorexia, sleepiness, or even coma may develop because of cholemia. The mortality varies from 2 to 6 per cent and depends upon the extent, severity and duration of the infection.

STANLEY H. MENTZER M.D.

McClure R. D. The Postoperative Complications of Cholecystectomy. *Ann Surg* 1929 xc 253

The author believes that the incidence of pneumonia as a postoperative complication can be further reduced by sufficient dental prophylaxis immediately before the operation and by sending the patients to the hospital a day or two before operation to preclude the development of acute respiratory infection.

The number of deaths from myocardial disease can be further reduced by closer cooperation with the clinician. In the case of a patient with myocarditis or other heart lesion operation should be delayed until the clinician states that the patient has been brought to the optimal condition for it.

The incidence of thrombosis and embolism is more difficult to reduce as the cause of these conditions is not clear. Postoperative exercises as recommended by Pool and thyroid medication as recommended by Walters may be of value. The injection of an anticoagulant at the time of operation may be the best solution of the problem.

The author reports four deaths which occurred when a second incision was made for removal of the gall bladder when the primary intervention was done in the lower part of the abdomen. He states that the practice of performing a second operation under the same anesthesia increases the mortality rate.

HOWARD A. McMEYER M.D.

Beaver M. G. Variations in the Extrahepatic Biliary Tract. *Arch Surg* 1929 xiv 31

The normal angular mode of juncture of the cystic duct with the hepatic duct as described in text books of anatomy was found in only 58 per cent of the cases studied by the author.

The long and short parallel types of cystic duct occur in more than a third of the cases and as is shown by the literature is perhaps the most common cause of accidents in biliary surgery. In such cases there is a marked increase in the length of the cystic duct with a corresponding decrease in that of the common bile duct. The cystic duct and the hepatic duct are so intimately bound together by fibrous tissue that they are absolutely inseparable and appear as a single duct. Any rough manipulation may tear the thin septum between them. The large portion of a cystic duct of this type which remains following cholecystectomy may dilate and form a new gall bladder probably with recurrence of symptoms. The cystic duct does not contain valves of Hester in the portion which lies parallel with the hepatic duct. The short parallel type occurred in 26.3 per cent of the cases studied by the author and the long parallel type in 7 per cent.

The anterior and posterior spiral varieties were found in 12 per cent. The length in the anterior spiral variety conforms closely to the normal. In the posterior spiral variety the cystic duct is markedly lengthened and the hepatic and common ducts remain about normal. It has been stated that strong traction on the gall bladder is much more likely to tear off a spiral cystic duct than a duct with a normal arrangement.

Accessory hepatic ducts occurred in five (8.7 per cent) of the cases studied. Four of these were accessory right hepatic ducts, three of which were also accessory to the cystic duct. In one case there was an accessory left hepatic duct. In length and diameter the accessory ducts corresponded closely to the normal cystic duct.

De Takats C. and Wilder R. M. Isolation of the Tail of the Pancreas in a Diabetic Child. *J Am Med Ass* 1919 xciv 606

Experimental work on dogs has shown that after separation of the tail from the body of the pancreas the islet tissue in the tail persists, hypertrophies and functions and the tolerance for sugar is increased. Increased sugar tolerance has been noted also after ligation of the body of the pancreas and hypertrophy of the islets has been found after obliteration of the duct. In man hypertrophy of the islets has been found at autopsy in a case in which the pancreatic duct was compressed by a carcinoma and hyperplasia has been demonstrated in a patient with carcinoma arising from the islet tissue.

These observations suggested to the authors that hypertrophy of the islets and increased function might be brought about in a patient with diabetes by obliterating the pancreatic ducts. The treatment in the case reported was based on that theory.

The patient was a boy thirteen years of age who had severe diabetes for more than seven years. His sugar tolerance had shown no signs of spontaneous improvement and in spite of a rigid diet and the administration of 40 units or more of insulin daily, the disease had remained stationary.

At operation the pancreas was found to be of normal consistency but the tail seemed very short. The pancreas was divided with the electrocautery as close to the midline as possible. The isolated tail was only about 3 cm long. The circulation of the tail seemed well preserved. The severed portion was wrapped in omentum and the abdomen closed without drainage.

The patient stood the operation well but it was difficult to adjust his insulin requirement as small doses produced hypoglycemia. On the eighth postoperative day he began to complain of intermittent colic. One of the attacks caused him to roll about in extreme agony and was associated with definite rectus rigidity and vomiting. At this time the leukocytes numbered 20,000. When the previous incision was re-opened a hard mass the size of an orange was found behind the stomach. When this was opened about 30 cc of a greenish yellow

fluid was evacuated. There was no fat necrosis. A cigarette drain and three gauze strips were placed behind the stomach and led out through the abdominal wall. The fluid proved to be pancreatic juice. It was inactive, but could be activated with succus entericus. The patient remained fairly well for four weeks after this operation but then developed a vague mass at the left costal margin. The mass was freely movable and was not tender. At a second exploration made through the old incision the mass was found to be the transverse colon above the splenic flexure and an abscess was discovered in this locality. The abscess had evidently drawn up and angulated the splenic flexure. The tail of the pancreas seemed to be intact. The abscess was drained. Two weeks later the patient returned to his home.

Four months after the operation an increase in the sugar tolerance was apparent. The authors believe that the results are encouraging and might have been even more satisfactory if more of the gland could have been isolated.

STANLEY H. MENTZER, M.D.

Key II. Disturbances of Carbohydrate Metabolism and Diabetes Mellitus After Diseases of the Pancreas (Über das Auftreten von Störungen im Kohlenhydratabbau und von Diabetes mellitus nach Erkrankungen des Pankreas) *Arch. Klin. Chir.* 1929, xlv, 378.

The author considers the fate of patients who have survived an acute pancreatic disease particularly with regard to the development of diabetes mellitus. He reviews cases reported in the literature in which diabetes occurred years after the pancreatic disease, others in which it developed soon after the pancreatic condition, and a third group in which the symptoms of the acute pancreatic disease were masked by diabetic coma and were recognized only after the coma had been overcome by insulin treatment.

Systematic investigation of the occurrence of diabetes after acute pancreatic disease were first made by Siebening of Schmiedens clinic. During the first year after operation all of the seventeen cases studied showed a disturbance of carbohydrate fixation which was followed by a gradual return of the blood sugar curve to normal. In no case was permanent injury of the insular apparatus to be found, but in Siebening's opinion late injury may result eventually from sclerosis of the organ.

The author was able to re-examine thirteen patients who were operated upon for pancreatic disease at the Urban Hospital. In the cases of eight the operation had been done more than five years previously. Bernard's method and the tolerance test with dextrose were used in the examinations. In eight of the thirteen cases there was a disturbance of carbohydrate metabolism and in five a true pancreatic diabetes. Three showed only a slight disturbance of carbohydrate assimilation and one a renal diabetes. The length of time between

the operation and the development of the diabetes varied from three months to twenty-two years. In the three mild cases operation had been done more than six months previously and apparently resulted in insufficiency of the gland.

Key's observations lead to the conclusion that the development of diabetes depends upon (1) the extent of the process in the pancreas, (2) the localization of the disturbing foci and (3) the destruction and injury of the acinous portion of the pancreas from which the regeneration of the islands occurs. As yet it has not been determined what causes the development of late diabetes or why there is such an interval between the acute pancreatic condition and the diabetes. Apparently two processes are concerned: the acute inflammation of the organ affecting a considerable part of the gland and increasing area of the gland leading to atrophy and sclerosis of the tissue.

JANES LN (Z)

Walker I. J. Carcinoma of the Head of the Pancreas *England J. Med.* 1929, ccl, 291.

The author presents a study of 15 cases of carcinoma of the pancreas. The diagnosis was made clinically and checked by laparotomy. Because of the danger of hemorrhage or pancreatic fistula biopsy was not done. In 3 cases metastatic nodes were removed.

In 4 cases in which a preliminary diagnosis of carcinoma was made the condition was found to be respectively chronic pancreatitis due to a stone in the common duct, haemochromatosis, cirrhosis of the liver and carcinoma of the gall bladder. Carcinoma of the pancreas was found in 27 of 6,000 autopsies. Metastases usually occur late. In none of the cases reviewed were gall stones or pancreatic calculi discovered but the association of chronic pancreatitis with carcinoma suggests a possible etiological relationship between these conditions.

The average age of the patients was fifty-eight years. Nine of the patients were males. Most of them were obese. Jaundice was present in all the icterus index varying from 18 to 60. All of the patients complained of digestive disturbances with belching, epigastric fullness and occasionally intermittent vomiting. Ten complained of pain. As a rule the pain was described as a dull intermittent ache. This discomfort was probably due to the pressure of the tumor mass on the coeliac plexus. The average loss of weight was 18 lb. In 13 cases the stools were clay colored. The van den Berg test was biphasic in every instance. There was no ascites and no enlargement of the liver. In 7 cases a tumor mass was palpable. The coagulation time was fifteen minutes. An intravenous injection of calcium chloride was given once daily for 3 days.

In all 15 cases cholecystogastrostomy by the suture method was done and the liver area was drained through a stab wound. In 2 cases post-operative bleeding occurred in one undoubtedly from the stomach and in the other from the abdominal wall. There were no deaths in the hospital. After

the operation 10 patients gained from 5 to 16 lb in two and one half months. Pruritus and jaundice disappeared in every instance.

Nine patients died. The average duration of life from the onset of the disease was one year and two months.

STANLEY H. MENTZER, M.D.

Thursfield H. Walton A. J. Hurst A. F. Weber F. P. and Others. Discussion on the Indication for and the Results of Splenectomy. *Proc Roy Soc Med Lond* 1929 xxii 1493.

THURSFIELD reviewed what is known concerning the physiology of the spleen. The spleen is a blood reservoir contracting and dilating with the demands of the abdominal viscera and is enlarged in nearly all acute infections. It is usually not the only splenic tissue in the abdominal cavity, there being in addition, spleniculi elsewhere or splenic tissue in the omentum. Removal of the spleen experimentally or for trauma or cystic disease results in no permanent change except a decrease in the fragility of the red blood corpuscles. There are three clinical conditions in which splenectomy is routine practice. These are splenic anemia, acholuric jaundice and the chronic type of recurrent purpura. While many other conditions have been treated by splenectomy the results in these have not been uniform or successful enough to warrant the operation as a routine procedure.

WALTON presented a classification of the injuries and lesions of the spleen. Rupture of the spleen either traumatic or spontaneous is an indication for immediate splenectomy as is also torsion of the spleen on its pedicle. Local lesions of the spleen such as cysts and tumors when sufficient to cause symptoms are best treated by removal of the organ. The cysts are of two types, the true and the false. The true variety include angiectatic neoplastic dermoid and parasitic cysts. The false variety are the traumatic inflammatory and degenerative cysts. Tumors of the spleen may arise from any of the component tissues of the organ. They include fibromata, fibrosarcomata, lymphomata, lymphosarcomata, angiomata and endotheliomata. Acute inflammatory lesions of the spleen contra indicate splenectomy. In protozoal and tuberculous infections in which the splenic focus is the main nidus of the disease removal of the spleen may be beneficial. In Hodgkins disease involving the spleen the condition is not sufficiently localized to that organ to warrant splenectomy and experience has shown that the operation is of little value. In splenic anemia and early Banti's disease splenectomy has been beneficial. On account of the improvement in the latter condition it was thought that other conditions with cirrhosis of the liver might be favorably influenced by the operation but this has not been the case.

General blood diseases are the most interesting group in which splenectomy has been tried. In aplastic anemia the formation of blood corpuscles is apparently defective and destruction of imperfect forms occurs in the spleen. It was thought that early

removal of the organ before the bone marrow became completely aplastic would be of value but in all of the three cases cited death occurred soon after the operation. Pernicious anemia should be treated by dietary measures. Removal of the spleen is no longer practiced in this disease. In acholuric and hemolytic jaundice, improvement is noted after removal of the spleen and the increased fragility of the red cells disappears. Purpura hemorrhagica is characterized by a low platelet count, prolonged bleeding time, failure of the blood clot to retract, a normal clotting time, the appearance of petechiae below a tourniquet, and hemorrhages beneath the skin and from the mucous membranes. While many forms of purpura are not relieved by removal of the spleen in the chronic relapsing form, which is usually hemorrhagic splenectomy results in cure. Leukemias are regarded as a malignant overgrowth of the leucocyte forming cells which escape into the peripheral blood stream. Splenectomy therefore cannot be of much value.

HURST stated that since all purpuras are hemorrhagic the name "purpura hemorrhagica" is not sufficiently descriptive. He suggests the name used by Tidy—'hemorrhagic diathesis'. He has had two cases of splenic anemia with advanced cirrhosis of the liver in which a complete symptomatic recovery followed splenectomy. He believes that polycythemia is an indication for splenectomy when the spleen is enlarged and cites a case from the Mayo Clinic in which marked improvement occurred after the operation.

WEBER reported the occurrence of acholuric jaundice in four generations. One subject was seventy six years of age. As all of the subjects enjoyed good health it is evident that splenectomy is not always necessary in this condition.

GORDON emphasized that purpura may not be a sign of purpura hemorrhagica. Hence in all cases of spontaneous bleeding the number of platelets should be determined and splenectomy should be performed if it is found deficient.

KELLY, MANSON, BAHR and WARING called attention to the fact that cholecystectomy has often been performed in cases of splenic anemia. In kala azar in which the spleen is enlarged, splenectomy has not been attempted.

MANUEL E. LICHTENSTEIN, M.D.

Escudero P. and Varetta M. E. The Condition of the Bone Marrow in Hemolytic Icterus Before and After Splenectomy. (*Estado de la medula ósea en la ictericia hemolítica antes y después de la esplenectomía*). *Rev med Lat Am*, 1929 xiv, 1011.

In the cases of three patients with hemolytic icterus the upper third of the tibia was trephined and the bone marrow examined. The bone marrow was active in the diaphysis of the tibia although the patients were adults. The erythropoietic reaction was of the orthoplastic type. In the case of one patient a second biopsy was performed four months after splenectomy and the results of the two biopsies were

compared. It was found that the bone marrow returned to a condition of functional inactivity after the splenectomy.

The authors conclude that in hæmolytic icterus the erythropoietic reaction of the marrow of the long bones is secondary to increased destruction of erythrocytes by the spleen.

AUDREY G. MORAN, M.D.

MISCELLANEOUS

Pendergrass, F. I. and Krl, E. The Significance of Gas under the Right Dome of the Diaphragm. *Am J Roentgenol* 1929 xxi 238

The authors report two cases of hepatopositis and two cases of ruptured viscus in which the roentgenogram disclosed the presence of gas under the right dome of the diaphragm. He then discusses the differential diagnosis of conditions in which gas is found in this region. These include transposition of the viscera, subphrenic abscess, and the presence of free gas after operation. MURRIS H. KAHN, M.D.

Carnett, J. B. Neuralgia of the Intercostal and First Lumbar Nerves. *Lancet* 1929 xxi 276

Abdominal pain and tenderness are located in more than 50 per cent of cases in the anterior abdominal wall and are entirely independent of intra-abdominal lesion. In parietal neuralgia the chief symptoms are pain and tenderness. Very exceptionally, muscular rigidity is present. The pain may occur in any part of the abdomen, its site depending upon the nerve or nerves involved. It is far more frequent on the right side than the left side, but in many instances it is bilateral. It may be continuous or intermittent. It varies greatly in severity in different persons and in the same person at different times.

The nerve supply of the anterior abdominal wall is derived entirely from the six lower intercostal and first lumbar nerves. Irritative and inflammatory lesions of these nerves are very common but are usually not considered in the diagnosis of abdominal pain and tenderness.

Acute attacks of intercostal neuralgia are usually due to acute toxæmia which commonly arises from infection of the upper respiratory tract. Tumors and other lesions of the spinal cord are seldom re-

sponsible for neuralgia. Neuralgia due to such causes is more apt to be chronic than acute. Herpes zoster may produce acute parietal neuralgia. Trauma, especially fractures of a vertebral body or process or of a rib, may cause direct bony irritation of an intercostal nerve. Falls on the buttocks with jarring of the spine may result in widespread neuralgia.

In its chronic form intercostal neuralgia indicates a vertebral lesion more frequently than any other condition. Before the thirty-fifth year of age the most common vertebral causes of intercostal neuralgia are scoliosis and excessive lumbar lordosis. After the thirty-fifth year the most common spinal cause of such neuralgia is arthritis. Intercostal neuralgia may be produced by any form of spinal arthritis, but occurs most frequently in hypertrophic form. Hypertrophic osteoarthritis of the spine is the most common cause of the neuralgia in the upper abdomen which simulates gall bladder disease. The nerve lesion of spinal arthritis can probably be ascribed to an inflammatory exudate pressing on the spinal nerves or their roots in the intervertebral canal or in the epidural space of the spinal canal. Syphilis is not a common cause of intercostal neuralgia.

In intercostal neuralgia the tenderness is far more widespread than the spontaneous pain. For the detection of parietal neuralgia palpation should be done while the patient holds his abdominal muscles as tense as possible. Any tenderness thus disclosed must necessarily be parietal because the tensed muscles prevent the elicitation of intra-abdominal tenderness by the examiner's fingers. The best muscular tension is obtained by having the patient forcibly depress the diaphragm, thereby ballooning out the abdominal muscles to their maximal convexity.

Tenderness on palpation that is present over relaxed muscles and completely absent over tensed muscles is within the abdomen and due to a visceral lesion. Tenderness found both over relaxed and tensed muscles is located in the anterior parietes and is due almost invariably to intercostal neuralgia.

The treatment of the syndrome of intercostal neuralgia is dependent upon the underlying cause.

Recognition of the frequent occurrence of intercostal neuralgia and proper diagnosis will prevent many futile laparotomies. SAMUEL KAHN, M.D.

GYNECOLOGY

UTERUS

Cotte G Remote Results of the Schauta Wertheim Kjelland Operation in the Treatment of Genital Prolapse (*Résultats éloignés de l'opération de Schauta Wertheim Kjelland dans le traitement des prolapsus génitaux*) *Gynec et obst* 1929 ix 337

Schauta's operation cannot be used in all cases of prolapse. From an anatomical point of view, interposition is only a measure additional to colpo-perineorrhaphy to correct certain cystoceles. In uncomplicated cystocele with the uterus fixed in good position and the sliding of the posterior vaginal wall reduced, a good anterior colporrhaphy with reconstruction of the perineal spur may suffice. If the uterus is in the horizontal position or if it is retroverted, Cotte usually completes the operation by a ligament fixation according to the Doleris Tellanda procedure. By this method he has obtained excellent results. In the cases of young women capable of pregnancy it is evidently the operation of choice.

In Cotte's opinion, interposition is not to be used in prolapse of the third degree in which the uterus must be given a certain fixity by a complementary abdominal operation. Certain low cystoceles with urethrocele which are situated so far forward under the pubic arch that the cradled fundus of the uterus cannot reach them are amenable to colporrhaphy with reconstruction of the urethra and of the sphincter if the latter is deficient as is often the case. Cystoceles which usually accompany genital prolapse with or without anterior colpocele and with or without hypertrophic elongation of the cervix are influenced favorably by interposition only if the uterus which is low but not prolapsed is mobile and sufficiently large to obliterate the genital hiatus.

Before performing the Schauta operation the surgeon should be sure that the uterus has not been drawn too far by the prolapse, that the uterosacral ligaments which anchor it to the posterior wall of the pelvis assure good fixation, that the uterus is mobile so that it can easily be swung forward, that there are no superadded adnexal lesions, and that the uterus has sufficient volume to cushion the bladder.

In the period from June 1921 to December 1927 Cotte operated 100 times for prolapse. He performed an interposition operation 42 times—once according to the Wertheim technique, 30 times according to the Schauta technique and 10 times according to the Kjelland technique. The immediate results were good and there were no deaths. In the cases of all patients examined later the bladder was maintained in position, there was absence of secondary slipping, the body of the uterus was enveloped in the anterior vaginal wall with which it was continuous, the

cervix well fixed, was only slightly depressed during efforts and the perineal band was perfectly reconstructed. In 1 case conjugal relations were obstructed by a somewhat too large resection of the posterior vaginal wall and too close a perineorrhaphy. In 2 cases there was some gaping of the perineum, but the prolapse did not recur. None of the women wore a pessary. Urinary disturbances had ceased. All except 1 of the women who still menstruated were free from menstrual disturbances. The 1 exception complained of signs of uterine congestion at the period. In this instance the sutures of the levatores were too tight. In a few instances sagittal adhesions between the anterior and posterior vaginal walls which formed a sort of double vagina were produced as accidents of electrization.

Of the 42 patients the youngest was thirty years of age, 7 were sixty five years old, 5 were between thirty six and forty years, 19 were between forty and fifty years, and fifteen were between fifty and sixty one years.

Cotte is not convinced that Kjelland's modification which is accompanied by considerable hemorrhagic oozing, is always necessary. If operation is reserved to cases of prolapse of the second degree in which the uterus is relatively well fixed it will be possible to use only the Kjelland incisions which resect 2 cuneiform flaps on the cervix without loosening of the vagina. Hemorrhagic oozing may then be avoided. For cases in which the cystocele is so marked that it seems necessary to interpose the uterus although the latter is not so well fixed as it should be, it is better to perform a ligament fixation according to the Doleris method in a second stage after an interval of from fifteen to twenty days. Cotte did this 20 times with excellent results.

In second degree prolapse interposition offers advantages of an anatomical nature since it makes a floor under the bladder and closes the genital hiatus much better than can be done with the levatores which are always difficult to isolate and suture. Moreover, as the operation is done entirely through the vagina it is more rapid in its execution and does not necessitate as does the triple operation a perineal stage and an abdominal stage. In the cases of women with prolapse of the second degree who are approaching the menopause it is the operation of choice. In simple cases it can be done under local anesthesia. Its operative mortality is practically nil. It gives permanent results which cannot be obtained as simply by any other plastic method.

The author tabulates his 42 cases under the headings age, clinical and anatomical data, operation, immediate results and remote results.

Genell S The Symptomatology and Diagnosis of Hæmatometra In an Accessory Horn of the Uterus (Zur Symptomatologie und Diagnostik der Hæmatometra im Nebenhorn) *Acta obst et gynec Scand* 1929 xiii 177

The author has studied all of the cases of double deformity of the genital organs which were seen in the Women's Clinic of Lund during the period from 1904 to 1928 a total of 47 cases in 15 000 gynecological cases admitted. The conditions were deformity of the hymen, 14 cases, uterus bicornis symmetricus 12 cases uterus arcuatus, 3 cases, vagina septa 4 cases and uterus bicornis asymmetricus 8 cases. In 5 of the cases of uterus bicornis asymmetricus there was hæmatometra of the accessory horn.

Uterus bicornis usually causes no obvious symptoms and is often found accidentally during exploration or operation for some other condition.

Stagnation of blood in an accessory horn causes disturbances in the menstrual cycle and intensive dysmenorrhæic pains. The findings of palpation in this condition are not always decisive alone but if they are compared with the history, a clinical diagnosis is usually possible. Four of the 5 cases reviewed by the author were correctly diagnosed before operation.

The treatment consisted in removal of the accessory horn. A cure resulted in every instance.

Ende F M Coagulation Diathermy in Cervicitis Using a New Electrode with an Account of the Results in 200 Cases *Am J Obst & Gynec*, 1929 xlii 75

In the treatment of chronic endocervicitis by means of destructive heat it must be borne in mind that the work done on the tissue equals the product of the power applied to the tissue multiplied by the duration of the application. The amount of scar is determined by the uniformity of the doses of the destructive heat.

In the use of the cautery the power applied is an unknown quantity. Diathermy with the new electrode eliminates the long current pathway with its resistance which renders diathermy with the ordinary active and inactive electrodes uncertain. The new electrode consists of a handle carrying a tapered tip of insulating material along one side of which are placed two parallel wires to make contact with the endocervix along the side of the canal. The electrode is graduated in quarters of an inch to permit the operator to measure the cervical canal by simply introducing it into the internal os and on its removal noting how far down it has been wet by the cervical mucus. The object of this procedure is to determine the amount of tissue that is to be coagulated and the length of the exposure that will be required. It is not necessary to remove the mucus from the canal. The presence of mucus is desirable as it provides good contact between the electrode and tissue.

The treatment described is the least painful of all methods in which destructive heat is employed.

When the disease is entirely eradicated healing is prompt and scar tissue is negligible and softer than that produced by the use of the cautery.

E L CORNELL M D

Lindenberg F Uterine Fibroids *Californ & West Med* 1929 xxxi 93

From 15 to 30 per cent of uterine fibroids are amenable to X ray therapy. When irradiation is restricted to the proper types it is nearly always successful. It is applicable only to uncomplicated fibroids with increased menstrual bleeding. These are practically all of the interstitial type.

The obliteration or destruction of the fibroid mass is dependent on the production of amenorrhæa by the destructive action of the rays on the ovaries that is castration. When the follicles are destroyed and their function ceases the hæmorrhages stop and the fibroid shrinks and disappears.

Young women, women who wish to bear children and nervous women should not be treated by irradiation.

Specific contra indications to the use of roentgen ray therapy are pregnancy, an ovarian tumor, pilosarcoma, degenerated fibroids, submucous fibroids and fibroids that have undergone malignant degeneration.

Fibroids which are not bleeding should be dealt with surgically if they require any treatment at all.

Tumors with bleeding of a metrorrhagic type should always be excluded from roentgen ray therapy.

Carcinoma is characterized by the metrorrhagic type of bleeding of bright blood and foul smelling discharge.

The diagnosis of sarcoma is usually more difficult. Sarcomata often do not bleed at all. Rapid growth of a tumor years after the climacteric amenorrhæa should suggest sarcoma. A fibroid grows only as long as the ovaries are functioning. After the menopause a fibroid either remains constant in size or retrogresses.

The author's technique to obtain a castration or premature menopause effect eliminates massive X ray dosage and substitutes about one third of the erythema dose so that no other tissue can be damaged. With the use of a high voltage machine furnishing about 200 kv Lindenberg obtains the desired effect in about two hours. He gives a half castration dose over each ovary, abdominal and dorsal on four consecutive days.

In a series of fifty nine cases treated by irradiation the treatment caused complete shrinkage of the fibroid in 30 per cent, a reduction of one half its size in 39 per cent, a reduction of one third in approximately 18 per cent and no response in 5 per cent.

CHARLES F DuBOIS M D

Douglass M Endometriosis in the Uterine Cornua *Surg Gynec & Obst* 1929 xlii 138

In certain cases of salpingitis isthmica nodosa Douglass has found cornual adenomata more or less

resembling uterine or tubal epithelium and with a varying amount of surrounding stroma similar in appearance to that of the uterus.

As these lesions apparently do not always react with characteristic changes to the menstrual cycle, hyperplasia of the endometrium is suggested. The severity of the infection is probably not an important factor as the fimbriated ends of the tubes are frequently patent although the cornua may contain many adenomatous lesions and the lumen of the tubes may be completely replaced by hypertrophic and hyperplastic connective tissue and leucocytes.

While it is possible that the lesions described may occur as sprouts from traumatized tubal or uterine mucosa after salpingectomy in the cases reviewed they were present at the time of salpingectomy.

ROLAND S. CROX, M.D.

Johansson J. Mola Hydatidosa Destruens and Chorionepithelioma of the Uterus with Pulmonary Metastasis. Spontaneous Perforation of the Uterus. Acute Anaemia and Death (Mola hydatidosa destruens und Chorionepithelioma uterum metastatibus pulmonum perforatio spontanea uteri anaemia acuta exitus). *Acta obst. et gynec. Scand.* 1929 VIII 131.

The author reports a case of mola hydatidosa destruens with spontaneous perforation of the uterus in which examination of the specimen showed also the presence of a chorionepithelioma. Johansson has been able to find only ten similar cases in the literature.

Schiller W. Painting with Iodine and Scraping the Epithelium of the Cervix (Jodpinselung und Abschabung des Portioepithels). *Zentralbl. f. Gynaek.* 1929 p. 1056.

In the last two years 242 scrapings from the cervical epithelium were examined at the Second University Gynecological Clinic in Vienna—216 in the course of the last six months after preliminary painting with Lugol's solution. The cervix was painted with the usual Lugol's solution. Following this procedure normal epithelium becomes a dark brown within a few seconds while carcinomatous epithelium becomes sharply differentiated by an immediate transition in the form of white unstained spots. One hundred and sixteen scrapings were made before the introduction of iodine painting.

Undesirable sequelae from the scraping were observed only in a single case, slight fever which soon subsided. It was afterward found that in this case the scraping was done improperly, namely in the region of an erosion instead of in the region of the squamous epithelium. Hence even this case cannot be attributed to the scraping and the procedure may be considered harmless.

The discovery of carcinoma in the scrapings has become less frequent since the introduction of iodine painting, which is attributed to the fact that since the introduction of iodine painting a much greater number of cases have been examined. Schiller em-

phasizes again as in his first report that painting with iodine can give only non specific results, i.e. that iodine negativity and carcinoma are not identical. What appears to be iodine negative may be carcinoma or merely hyperkeratosis or traumatic desquamation. Painting with iodine can only attract attention to suspicious areas in which the epithelium is pathologically changed. The nature of the pathological change can be determined only by histological examination of the painted epithelium curetted off. The curettage must remove the squamous epithelium in its entirety from the substratum. "Cell smears" are not sufficient and should not be used. If complete pieces of the epithelium are not found in the histological section the technique of the curettage was faulty. When carcinoma is suspected during the clinical examination because of foul smelling leucorrhoea or hemorrhages and the painting reveals no suspicious area in the region of the cervical epithelium carcinoma must be sought deeply, i.e. in the cervical canal from which it may possibly spread into the stroma of the cervix beneath the intact squamous epithelium.

In the section obtained by the scraping carcinoma is diagnosed from the characteristic atypical and polymorphic character of the cells. Deeply penetrating growth clinches the diagnosis and can be shown by serial sections but is not absolutely necessary to establish the diagnosis. Additional histological characteristics of carcinoma are a sudden sharp transition of normal epithelium into carcinoma, disappearance of glycogen in the section stained by the method of Best, corresponding to the result of painting with iodine, disappearance of the blue protoplasm in the prickle cell layer with the epithelial fiber stain of Pasini, and a sudden increase of oxygenophilia with the potassium permanganate stain of Unna.

HENRIK G.

Uddström M. A Contribution to the Question of Simultaneous Malignant Tumor and Myoma of the Uterus. *Acta obst. et gynec. Scand.* 1929 VIII 112.

The author reviews 769 histologically examined myomata removed in the period from 1905 to 1926. Fifteen (about 2 per cent) were definitely malignant, 14 showing sarcomatous and 1 showing cancerous degeneration. Most of the women were between forty and fifty five years of age. In only 4 cases 1 of them a case of cancer did the myoma have a submucous location.

The bleeding of malignant myomata is difficult to differentiate from that of non malignant myomata. In 2 of the cases reviewed the bleeding began after the clumacterium, but in the cases of 2 other patients who had passed the menopause there was no bleeding. In 1 of the latter the myoma was still submucous. When the myoma is situated elsewhere there is less reason to expect bleeding.

Pain is often associated with ordinary myomata but seems to be more frequent in those with malignant degeneration. Signs of cachexia are surpris-

ingly rare. They were pronounced in only 1 of the cases reviewed. Bladder and intestinal symptoms due to pressure were present in 3 cases. Tenderness on palpation was found in 5. It was perhaps more than a coincidence that in 2 cases the myomata had been irradiated. It is generally held that myomata suspected to be sarcomatous should be excluded from irradiation as the ovarian doses are believed to act as stimulating doses on the cells of malignant tumors. Rapid growth of the neoplasm occurred in 3 cases.

In 3 cases operation revealed dilated veins on the surface of the tumor. In 3 the neoplasm was a bluish red and in 2 it had a soft brittle consistency. In 3 cases the cut surface was soft and oedematous; in 1 it was a grayish yellow and oedematous; and in 1, it suggested a greenish jelly. In 1 case the whole tumor was cystically degenerated.

In only 1 case of malignant degeneration was the diagnosis made with certainty before the operation. In 1 case malignancy was suspected before the operation and in 2 cases during the operation.

A cure lasting for at least five years was obtained in 7 cases (47 per cent). Most reports give the incidence of five year cure at from 20 to 25 per cent.

The author draws the following conclusions:

1. When before the menopause a uterine tumor begins to grow suddenly and causes disturbances in the form of hemorrhage, pain, and loss of weight, malignancy should be suspected.

2. When during or after the menopause a uterine tumor continues or begins to grow, malignancy is almost certain even if bleeding does not occur.

EXTERNAL GENITALIA

Bey A. M. *Urinary and Rectovaginal Fistulae in Women*. *J Obst & Gynec Brit Imp* 1929 26:111-118.

The author gives a résumé of 76 cases of urinary fistula in women operated upon by him and his associates in Egypt. Two hundred and thirty one were cases of vesicovaginal fistula. Two hundred and thirty eight of the patients were cured, 28 were relieved, and 10 were not benefited by the operation. In 259 cases the fistula was the result of a difficult labor and in 8 it was due to accidental injury of the bladder. In none was it caused by radium ulcerations or cancer. The fistula differed in size from tiny holes which would not admit a bristle to large gaps produced by total destruction of the base of the bladder and the vesicovaginal septum.

In all cases careful pre-operative preparation was given and the operation was performed under sto-vaine spinal anesthesia. The author attributes the high incidence of good results to attention to details such as good exposure and the use of artificial light.

Stovaine anesthesia permits thorough depression of the posterior vaginal wall. The bladder wall is dissected back sufficiently to give ample room for the insertion of sutures without tying them too tightly. In placing the sutures the author uses

small round needles and does not perforate the bladder wall.

He cites also the results in 49 operations for rectovaginal fistula in women. In 41 of these cases the condition was due to the irregular healing of perineal lacerations involving the rectovaginal septum. Fistulae situated at or near the perineum were treated by splitting the perineum and performing a complete perineorrhaphy and those in the middle third of the vagina by vaginal repair. Fistulae in the vault were treated by the abdominal route. There was only 1 failure.

HARRY W. FINE, M.D.

MISCELLANEOUS

Cassidy L. and Stumpf R. *X-Ray Treatment of Non Malignant Cases in Gynecology*. *Irish J Med* 1929 6: 549.

Cassidy and Stumpf are very enthusiastic regarding the use of the X-ray in the treatment of non-malignant gynecological conditions.

Dysmenorrhea was treated by irradiation of the hypophysis, with resulting cure in 50 per cent of the cases. In about 75 per cent of the cases of dysmenorrhea examination revealed a small uterus with a long conical cervix and acute anteversion.

Menorrhagia and metrorrhagia were strikingly benefited by irradiation of the spleen. The result is ascribed to the increased production of fibrin ferment with consequent rapidity of blood coagulation. The authors report thirty cases in twenty-one of which the symptoms subsided completely.

Patients with a primary amenorrhea, that is, with probably no ripening follicle influence and a small underdeveloped uterus did not respond well to the X-ray stimulation. In those with oligomenorrhea there was a very satisfactory return to normal function after the irradiation.

In acute and chronic pelvic infections striking results were obtained from irradiation over the focus of infection.

CHARLES F. DEBOI, M.D.

Scheffey L. C. and Schmidt W. H. *Diathermy as an Adjunct in the Treatment of Pelvic Inflammatory Disease*. *Am J Obst & Gynec* 1929 23: 230.

Scheffey and Schmidt made a comparative study of pelvic infections treated with and without diathermy. They believe that the beneficial results obtained from diathermy are due to improvement of the circulation rather than to the heat destruction of bacteria. They state that diathermy is not a specific treatment. It must be used in conjunction with other methods and must be supervised by a clinician.

Diathermy is indicated especially in the cases of young women with a first attack of pelvic disease with or without adnexal masses in whom acute symptoms and fever have subsided. It is of less value in recurrent cases. When there is a marked reaction characterized by severe pain or fever it should be discontinued for a time at least. It should

never be used in the presence of fever or in cases of pelvic peritonitis, myoma or ovarian cysts or during menstruation or profuse bleeding of an inflammatory nature

E. L. CORNELL M.D.

Read C. D. and Roques F. The After Results of the Operative Treatment of Endometriomata. A Study of Forty One Cases. *Proc Roy Soc Med Lond*, 1909, XVIII, 1441.

The authors studied the results of different forms of treatment in forty-one cases of endometrioma. In all the diagnosis was confirmed by microscopic examination. The ovary was involved in twenty-five cases (61 per cent). In some of these one ovary was removed completely. In others both ovaries were removed completely or their complete removal was attempted with or without hysterectomy. Of fourteen patients treated conservatively, ten remained free from symptoms. There is no record of the subsequent occurrence of pregnancy in any of the patients treated conservatively. Of thirteen cases in which all ovarian tissue was removed, a permanent

cure was obtained in ten. In one case the treatment was unsuccessful and the patient was subsequently treated with radium. Two patients were subjected to hysterectomy and complete removal of all accessible ovarian tissue after conservative surgical measures had failed.

Uterine endometriomata were treated by local excision or by total or subtotal hysterectomy with or without salpingo-oophorectomy. The results were very satisfactory.

Three cases of endometriomata occurring in abdominal scars were cured by surgery. An endometrioma in the rectovaginal space was successfully excised by way of the vagina. One case of umbilical endometrioma was treated by excision of the umbilicus with a satisfactory result.

The younger the patient the stronger the indication for conservative treatment except when the tumor is large and there is extensive infiltration of the surrounding structures. In inoperable cases and cases in which surgery has failed, radium is of value.

HARRY W. FINK, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Cräpert O. The Sellheim Luetlge von Mertz Alcohol Extract Reaction and Some of the Sources of Error (Leber des Alkohol Extrakt Reaktion nach Sellheim Luetlge von Mertz und einige ihrer Fehlerquellen) *Monatsschr f Geburtsh u Gynäc*, 1929 LXXXI, 41

In the first part of this article the author reports his investigations regarding the Sellheim Luetlge von Mertz alcohol-extract reaction part of which were done in collaboration with Zell. In the use of placenta extract in tests of 136 sera a correct diagnosis of pregnancy was made in 82.4 per cent. In 80 sera tested with carcinoma extract the test was accurate in 71.25 per cent, whereas an accurate result is usually obtained in only 50 per cent of cases of carcinoma. Twenty nine sera were tested with testis extract. The findings were correct in 13 (44.8 per cent) and incorrect in 16. From his experience the author draws the following conclusions:

1. A positive alcohol extract reaction in the use of placenta extract may be considered a very probable sign of pregnancy.

2. A positive alcohol extract reaction with carcinoma extract indicates with great probability the presence of a carcinoma of the uterus provided pregnancy myomata and inflammatory processes can be ruled out. A negative reaction does not exclude carcinoma of the uterus and is no criterion of freedom from recurrence after a radical operation for carcinoma.

3. Neither a positive nor a negative alcohol extract reaction with testis extract is an indication of the sex of the fetus.

In the second part of the article the author reports on physicochemical investigations undertaken in part with Kindt on injection tests with the extracts these disclosed interesting mistakes. In the placenta extract the requisite minimal quantity of 0.027 per cent of free hydrochloric acid was not present more over there were considerable fluctuations and differences in the salt content. The hydrogen ion concentration varied considerably. In the carcinoma extract the differences in the free hydrochloric acid and hydrogen ion concentration were less striking. It must therefore be assumed that soon after its preparation the extract undergoes a change in its taphasic system due to some unknown factor which may considerably influence the accuracy of the reaction.

CRÄPERT (G)

Lavell T E. The Diagnosis of Ectopic Gestation. *Am J Obst & Gynec*, 1929 XVIII, 379

This article is based on 410 consecutive cases of ectopic pregnancy treated on the gynecological serv-

ice at Bellevue Hospital New York during a period of seventeen years. Four hundred and six of the women were operated on. In 4 cases the condition was demonstrated at autopsy. In about 50 per cent of the cases operation was performed within twenty-four hours after the patient's admission to the hospital. In the others a more or less prolonged period of observation was necessary to establish the diagnosis.

The average number of previous pregnancies was two and eight tenths and the average number of children born two and three tenths. In approximately 25 per cent of the cases the last pregnancy had occurred within two years, in 44 per cent within three years, and in 61 per cent within five years. Of 49 women 21 were unmarried, 41 per cent became pregnant within a year and 55 per cent became pregnant within two years.

Abdominal pain was present in every case in which the history was reliable or complete. This pain was characteristically variable with sudden exacerbations. Radiation of the pain especially to the chest or shoulders, is of aid in the diagnosis.

Vaginal bleeding was extremely irregular and subject to remissions. A large majority of the patients had only slight or spotty bleeding occurring at long intervals.

An extremely valuable but a frequently missed symptom is the sudden asthenia due to the shock produced by even slight internal hemorrhage. Morning sickness and breast changes were very seldom reported. Urinary symptoms were frequent but not characteristic. Abdominal pain on urination or defecation is suggestive but not typical or frequent. In about 10 per cent of the cases reviewed no mass was palpable on vaginal examination. Rectovaginal examination was found best for the detection of free blood in the cul-de sac.

There were 131 ectopic pregnancies on the right side and 124 on the left side. Twelve were interstitial, 1 was ovarian, and 1 was abdominal. In 3 cases there were twin fetuses but there was no case of bilateral tubal or coincident uterine pregnancy. Rupture was more than 3 times as common as abortion. The opposite tube was described as normal in 103 cases, as showing chronic inflammation in 81, as showing hematosalpinx in 8, and as absent in 22.

Colpotomy is extremely valuable when there is an easily accessible mass in the cul de sac which cannot be differentiated from a collection of pus. Aspiration of the vaginal vault is valuable under the same conditions but is not without danger.

The diagnosis of ectopic pregnancy is still difficult in a very large number of cases. Unfortunately very little except negative help can be expected from the laboratory.

In the discussion, TAYLOR said that he does not hasten operation for ectopic pregnancy unless the patient is in shock and there is a possibility that bleeding is still going on.

DANNREUTHER called attention to the fact that a frequent symptom is sensitivity of the cervix on manipulation.

In closing the discussion LAVELL said that the operative death rate is 2.68 per cent and is influenced a good deal by the type of case. Decidual casts are very seldom reported by the patient and are seldom seen in the hospital.

E. L. CORNELL, M.D.

Jerlov E. The Diagnosis and Treatment of Extra Uterine Pregnancy (Zur Diagnose und Behandlung der Extrauterin-gravidität) *Acta obst. et gynec. Scand.*, 1929, VIII, 249.

In a series of eighty six cases of extra uterine pregnancy, the author studied the blood pressure and hemoglobin and the relative value of the transfusion of autogenous blood and of blood from a donor. He states that the changes in the blood pressure and hemoglobin due to internal hemorrhage occurring in extra uterine pregnancy have hitherto received little attention although they are often of diagnostic value. Reduction in the blood pressure occasionally very marked is nearly a constant phenomenon within a few hours after a free internal hemorrhage. The degree of the reduction at a given moment depends more on the time that has elapsed between the onset of the bleeding and the blood pressure measurement than by the quantity of blood lost. Therefore when the blood pressure is not determined until some time (e.g. twelve hours) after the beginning of the hemorrhage it may be found normal. In the cases studied by the author the blood pressure was lowest in those of irregular bleedings with a relatively large loss of blood. Systolic pressures as low as from 20 to 30 mm. Hg were noted.

In cases of limited relatively small hemorrhages there is generally no reduction in the blood pressure unless a fairly acute hemorrhage has occurred with in a few hours immediately preceding the blood pressure determination. Even in such cases the reduction is usually slight.

It seems that the reduction in the blood pressure is usually ascribable to the loss of blood from the blood tracts. The loss of blood into the peritoneal cavity is occasionally accompanied by a condition of shock with a surprisingly low pressure. In one or two cases the reduction was apparent within a few minutes after the beginning of the hemorrhage. It was of interest to note that in certain cases the systolic blood pressure remained for hours as low as from 40 to 50 mm. Hg or lower (in one case for four teen hours) without cessation of function of the bulbar centers. Blood pressure reductions of a similar type do not seem to occur in peritonitis (except in cases with shock).

In all cases the hemoglobin was found reduced. It must be borne in mind however, that after a

single internal hemorrhage the hemoglobin is lowest between the second and fifth day after the onset of the bleeding.

A drop in the hemoglobin has most significance in cases of restricted hemorrhages in which the differential diagnosis is occasionally difficult. In cases in which a tumor develops in the pelvis within a few days and there is a simultaneous decrease in the hemoglobin without external bleeding from any other organ the reduction in the hemoglobin is probably of decisive importance in the diagnosis.

In the Sabbatsberg Hospital 186 cases of extra uterine pregnancy were treated in the period from January 1, 1919, to June 30, 1927. Three of the women died. One died of miliary tuberculosis which was entirely unrelated to the pregnancy. The two others died of peritonitis probably caused by a simultaneous chronic salpingitis. The mortality was therefore 1.1 per cent. There were no deaths from hemorrhage. The governing principles in the treatment were: (1) immediate operation in cases of copious free hemorrhage; (2) operation in cases of limited hemorrhage in which the diagnosis is certain, expectant treatment first in cases in which the diagnosis is not certain; and (3) operation in cases with progressive symptoms. Conservative therapy in those in which the symptoms are decreasing. No case was treated by the transfusion of autogenous blood or of blood from a donor.

The experience at the Sabbatsberg Hospital indicates that the danger of fatal hemorrhage and the necessity for transfusion are exaggerated. The transfusion of autogenous blood is associated with danger on account of the salpingitis which is usually present in these cases.

Husfeldt E. Anæmia of Pregnancy Caused by Lead Poisoning and Resembling Pernicious Anæmia (Perniciosa-ähnliche Graviditätsanæmia durch Bleivergiftung hervorgerufen) *Acta obst. et gynec. Scand.* 1929, VIII, 75.

In the case reported by the author the anæmia was the result of an acute or subacute poisoning due to red oxide of lead (Pb_2O_3) taken as an abortive. It was severe, slightly hyperchromatic, and associated with icterus and a neutrophile leucocytosis.

The cases of pernicious anæmia of pregnancy which have been reported in the literature have shown a very varied blood picture. True pernicious anæmia with leucopenia, a relative lymphocytosis and thrombopenia has been found as well as simple hyperchromatic anæmia and hyperchromatic anæmia accompanied by a neutrophile leucocytosis with myelocytes. The part played by the pregnancy in the causation of the condition was often very doubtful.

The author emphasizes the importance from the therapeutic standpoint of great care in the diagnosis of pernicious anæmia during pregnancy, since in the presence of severe anæmia the further blood loss caused by interruption of the pregnancy and the possibility of infection constitute grave dangers.

Peckham C H Chronic Nephritis Following Eclampsia *Bull Johns Hopkins Hosp Balt*, 1929 xlv 176

It is generally believed that there is little probability of the recurrence of eclampsia or the development of chronic nephritis following eclampsia. However a woman with chronic nephritis not infrequently gives a history of a previous toxemia of pregnancy. Post and Steiglitz obtained such a history in 50 per cent of the cases of nephritic women under forty five years of age and in the majority of investigations made in recent years it has been found that the incidence of permanent renal damage following eclampsia is greater than was previously suspected.

In the obstetric clinic of the Johns Hopkins Hospital, the attempt has been made during the last ten years to get all patients especially those who had toxemia to return for re examination thirteen months after delivery. As the result it has been possible to obtain data on seventy four patients representing seventy seven cases of eclampsia (three patients had two attacks each). Of these women seventeen (23 per cent) were found to have developed chronic nephritis. The severe cases (grouped according to I den's classification) showed an incidence of nephritis over twice as great as the cases of the mild type and women who had had antepartum eclampsia showed a higher incidence of nephritis than those who had had intrapartum or postpartum eclampsia.

Age and multiparity were found to be predisposing factors. Sixty six and six tenths of the women over forty years of age developed chronic nephritis and 39 per cent of the multiparae as compared with 12 per cent of the primiparae. It was found also that the more marked the hypertension and the greater the amount of albumin in the urine (as shown by the I saach method) the greater the incidence of permanent renal damage. Forty eight per cent of the patients with a systolic pressure of 200 or over and 44 per cent of those with 150 gm. or more albumin to the liter of urine were found to be nephritic while none of those with a pressure less than 170 was affected. Moreover it was noted that the longer the toxemia had been present before delivery the higher the incidence of permanent renal damage.

The blood chemistry findings the number of convulsions the time elapsing between the development of convulsions and delivery the duration and severity of the labor and the anesthetic employed seem to have no effect as regards the frequency and severity of subsequent chronic nephritis. Nor can the findings as late as six months after delivery be taken as a reliable guide to the future.

In twenty one of the seventy seven cases of eclampsia reviewed the condition developed in patients who were believed to have had adequate prenatal care having been in attendance at the prenatal clinic for six weeks or longer where they were seen once a month up to the seventh month and every two weeks thereafter. Of these twenty-one patients

four developed eclampsia at home six within twelve hours after their admission to the hospital and eleven, twelve or more hours after their admission. E. L. KING M D

Couvelaire A Progress in the Prevention of Fetal Mortality During Gestation (*Progres réalisés dans la prophylaxie de la mortalité fœtale pendant la gestation*) *Gynec et obst* 1929 xix 477

The figures of the Baudelocque clinic with regard to fetal mortality before the onset of labor show a decline from 237 to 145 per 10 000 since the early years of this century. Thus improvement occurred chiefly in the mortality from syphilis in the second half of pregnancy, in which the decrease was from 111 to 45. However some of it occurred in the fetal mortality associated with albuminuria hypertension and convulsive and hemorrhagic eclamp in the mother.

Two periods are compared the period from 1901 to 1903 with 20 924 births and the period from 1911 to 1913, with 22 166 births. The number of fetal deaths in these two periods respectively were cases of albuminuria 105 and 56 cases of convulsive eclampsia 17 and 12, and cases of uteroplacental apoplexy 25 and 24. The coefficient of fetal mortality associated with these syndromes has therefore fallen from 144 to 41. Cases of convulsive eclampsia decreased from 50 per 10 000 in the period before 1901 to 14 per 10 000 in the period from 1911 to 1913. However the graph shows no change between the period from 1906 to 1913 and the period from 1916 to 1926. The decrease in the fetal mortality in the syndromes of humoral disequilibrium was probably due in large measure to prenatal care.

FLORENCE A. CASPENTER

Murphy D I The Outcome of 625 Pregnancies in Women Subjected to Pelvic Radium or Roentgen Irradiation *Am J Obst & Gynec* 1929, xlviii 179

Goldstein L and Murphy D P Microcephalic Idiocy Following Radium Therapy for Uterine Cancer During Pregnancy *Am J Obst & Gynec* 1929 xlviii 189

Murphy attempted to determine the effect of irradiation of the pelvis of women with radium or the roentgen rays on the health and development of subsequent children. The cases were divided into preconception and postconception irradiation. He found that irradiation before conception may be followed by the birth of unhealthy or defective children and that postconception irradiation is extremely likely to be followed by serious defects in the offspring. The most common defect after postconception irradiation is microcephaly a fact which strongly suggests that the abnormalities are the result of the irradiation received by the embryo. Murphy therefore suggests that pelvic irradiation should always be preceded by curettage in order that irradiation of an embryo may be avoided. He believes that the pregnant uterus should never be subjected to radiotherapy and that if the presence

of an embryo is not discovered until after irradiation the pregnancy should be terminated at the earliest possible moment.

GOLDSTEIN and MURPHY report a case of macrocephalic idiocy following radium therapy for uterine cancer during pregnancy. The mother aged twenty-nine years had had two pregnancies. The first resulted in the birth of a normal female child at term in March 1914. This child developed normally. After its birth the mother did not menstruate again until January 1916. Bleeding then occurred irregularly for four months and at the end of that time became continuous. Examination revealed springing from the left side of the cervix a pedunculated soft friable and ulcerated mass about 2 in. in diameter. A clinical diagnosis of papillary carcinoma second stage was made. The tumor was removed with the cautery and 185 mgm of radium filtered with 1 mm of brass and 0.5 mm of aluminum were inserted at the site of the growth and allowed to remain for twenty-four hours (4,440 mgm hrs.).

The second child a boy was born spontaneously with the vertex presenting, after a labor of eight hours on June 21, 1916. The puerperium was uneventful. The mother is well at the present time.

The child at birth weighed 2 lb. 13 oz. He showed no gross abnormalities and no asphyxia but was about six weeks premature. For the first six weeks of life he kept his eyes closed most of the time and had to be fed artificially. Denutition began when he was nine months old. He was unable to walk until he was five years old and he now trips very easily and often falls. He has never learned to talk. His parents have trained him to obey very simple commands such as sit down and come here but these must be repeated several times. He can make known a few wants by means of gestures. His general behavior has always been good. He cannot wash or dress himself. There has been no history of convulsions, spasms or twitchings. He has never been seriously ill.

At the time of this report the boy was twelve years of age, underweight (60 lb.) and poorly developed. His height was somewhat below normal for his age. Organically he was normal. The parietal and occipital regions of his head were both flattened. He had a fixed and almost vacant facial expression. He was able to walk but not in a vigorous manner. He held his trunk rather rigidly and his long thin arms in partial flexion at the elbow. His genitalia were normally developed for his age. The Wassermann reaction was negative.

E. L. CORNELL, M.D.

LABOR AND ITS COMPLICATIONS

Lindén, O. The Prognosis in Parturition for Old Primiparae at Södra Barnbördshuset Between 1912 and 1927. *Acta obst. et gynec. Scand.* 1929, vol. 35.

The author reports the findings of a review of the cases of 202 primiparae over forty years of age who were delivered at Södra Barnbördshuset in Stock-

holm in the period from 1912 to 1927 inclusive. The purpose of the review was to determine whether the expectant treatment practiced at that hospital has given results which justify its continued use or call for its discontinuance in favor of more active therapy with the more frequent performance of cesarean section.

About 25 per cent of the patients were delivered after twelve hours and about one third or two thirds of them within twenty-four hours. In the cases of about 6 per cent labor lasted longer than forty-eight hours. Sixty per cent were delivered spontaneously and 40 per cent with artificial help. 34 per cent of the latter by means of forceps. Cesarean section was done only once—in a case of breech presentation. Of the total number of 20,087 primiparae delivered in the course of the same sixteen-year period 7.66 per cent were delivered with forceps.

Forty of the patients whose cases are reviewed had had a previous miscarriage and 85 had premature rupture of the membranes but these factors did not influence the average duration of labor or the prognosis for the mother or child in the group as a whole.

The maternal mortality was nil and the infant mortality 10.2 per cent. In 3 cases in which the child's death was due to prematurity or deformity are excluded the infant mortality was 8.8 per cent. The mortality of the infants of the total number of primiparae was uncorrected 3.78 per cent and, corrected 2.04 per cent.

Because of the favorable results obtained the author believes that on the whole expectant treatment should be continued but he regards it as necessary that the women be cared for in a hospital. He regards cesarean section as justified in cases in which both the child's and the mother's life are endangered as in placenta previa and eclampsia and in those in which the child's life is more endangered than the mother's as in abnormal presentations and the mother is very anxious to have a child. He believes that in all other cases it is wiser not to expose the mother to the greater risks of cesarean section particularly because women subjected to this operation are rarely willing to become pregnant again for fear that a second cesarean section will be necessary.

Schulze, M. Labor in the Elderly Primipara. Factors in the Prognosis. *J. Am. M. Ass.* 1929, vol. 824.

The dangers and difficulties of labor in the cases of elderly primiparae have been somewhat exaggerated. In general neither the fetal nor the maternal mortality is increased above the levels generally accepted as normal and the average duration of labor is only slightly prolonged. About 20 per cent of the women have strikingly rapid and easy labors.

Dystocia may be expected in about 15 per cent of the cases but is usually dependent on complicating factors rather than on age alone. A careful consideration of the patient will usually permit a

fairly accurate prognosis even before labor begins. Abnormal presentations and contracted pelvis both of which are more frequent than in younger women increase the necessity for operative intervention and with it the danger to both mother and child. A woman beginning labor with the head engaged in a normal pelvis in an occiput anterior presentation has little likelihood of difficulty. If she has good pains the likelihood of dystocia is almost negligible.

The most important single factor in the prognosis is the quality of the uterine contractions and this unfortunately cannot be accurately determined until after labor has set in. However it is known that the frequency of inadequate pains increases with advancing age.

The development of the cervical cesarean section in recent years makes it possible without materially increasing the risk to the mother to await labor, observe the type of the uterine contractions, and then, if the contractions seem insufficient, perform cesarean section. Especially in the cases of older women and those with previous long standing sterility, cesarean section will probably always be necessary rather frequently as the greatly increased value of the child in these cases makes it desirable to decrease the fetal risk.

CARL H. DAVIS, M.D.

Neumann H. O. Labor with Brow Presentation (De Stürmungsgeburten). *Arch f Gynaek*, 1929 cxxxv, 334

This article deals with the obstetricomechanical problems of deflection presentations. It is based on the obstetrical material of the last ten years at the University Gynecological Clinic at Marburg. Among 6,300 labors brow presentation occurred in 8 (0.12 per cent) and face presentation in 44 (0.69 per cent). The author emphasizes that the term 'brow presentation' should be used only when the brow is at the lowest point on the pelvic floor in the line of expulsion. Brow presentations are to be differentiated from brow positions. Of the 8 brow presentations mentioned 5 terminated in spontaneous delivery. In 1 case birth was premature. Therefore only 4 cases remained for study of the natural obstetricomechanical factors.

The course of the 4 spontaneous deliveries shows that when patience is exercised a living child may be born even when the labor is prolonged. Therefore the question as to whether brow presentation is in itself an indication for operative termination of labor must be answered in the negative.

In the first case the head passed through the entire birth canal with the frontal suture in the transverse direction and turned on the pelvic floor in the transverse diameter with displacement of the turning point from the malar bone to the upper jaw. In the second case the head passed through with the frontal suture in an oblique direction so that the malar bone and the lateral orbital ridge were subjected to pressure. In the third and fourth cases the deep transverse position persisted throughout the expulsion mechanism so that the head was born with

the frontal suture transverse. It appears that non-occurrence of the last turning must be considered normal in such cases. The greater the deflection the sooner the face appears under the descending ramus of the pubis. If the brow presentation approaches the sinciput position the occiput appears first. Heymann states that after the brow has begun to rotate in a backward direction the oblique position is undoubtedly the position most favorable for expulsion.

With regard to the etiology of the brow presentation the author holds the view that the occurrence of such a presentation can be understood only from a consideration of all positions of deflection. One and considers the brow presentation an incomplete face position. The primary face position is to be differentiated from the secondary face presentation. An extreme deflection may be produced even at the beginning of labor by inhibitory malformations such as goiter, hygroma of the neck, etc. However the chief cause of the deflection position is to be sought in the relationships between the fetal head and the maternal pelvis. Among the cases at the Marburg clinic a normally sized pelvis was found 3 times, an especially large pelvis twice and a moderate contraction of the pelvis in the longitudinal diameter once.

The author then asks the following questions:
1. How does an anomaly of position occur? (a) What part is played in it by the shape of the head? (b) What part is played in it by the pelvis?
2. How does brow presentation occur? (a) What part is played in it by the shape of the head or the fetus as a whole? (b) What part is played by the pelvis?

3. Why does the mechanism of labor differ from the general rule after the occurrence of a brow presentation? (a) In relation to the passage of the head down to the pelvic floor (deep transverse position)? (b) In relation to the mechanism of expulsion?

He answers these questions as follows:

1a. A congenital ontogenetically induced shape of the head may lead to a presentation of the head at the beginning of labor which is favorable to a certain passage through the pelvis. The same four basic types of shape of the head that are found in the adult appear quite pronounced in the newborn infant.

1b. With shortening of the longitudinal diameter at the pelvic inlet the biparietal diameter enters the lateral pelvic semicircle opposite that of the sinciput. The sinciput sinks and the large fontanelle enters the line of expulsion. If the pelvic contraction is greater the position of deflection persists.

2a. A brow presentation may be developed at the pelvic inlet. In the presence of hereditary oxycephalus or when other causes inherent in the fetus are effective no further deflection will occur. Also with a head in the sinciput presentation the congenital form of the head may be the cause of a further deflection in the sense of a brow presentation.

2b If the normal filling of the birth canal which leads to the regular expulsion is absent, as for example when the child is small and the pelvis is of normal size, or the child is of normal size and the pelvis is very wide further deflection and rotation may not occur with brow presentation the brow presentation persists as a so called incomplete face presentation

3a The frequently found deep transverse position is explained on the one hand by the fact that when the skull is small the passage through the birth canal down to the floor of the pelvis proceeds rapidly and without any rotating force and when the head is large it does not allow rotation because the occiput lying posteriorly remains caught at the innominate line

3b As a result of the marked protrusion of the brow the head acquires a wedge or pyramidal form the apex of which is formed by the brow The bitemporal diameter takes the obstetricomechanical lead It takes its position in a longitudinal direction in the levator cleft in response to even the slightest resistance Turning of the head begins only when the maxillobregmatic diameter has reached the levator cleft This version may not occur in the presence of a wide pelvis with a relaxed musculature When the biparietal exceeds the bitemporal diameter in length the occiput is usually born first When on the other hand the biparietal diameter lies further anteriorly the face usually appears first under the lateral descending ramus of the pubis and the occiput follows

In an appendix the author reports on the brow and face presentations seen in the Dresden clinic (E. Kehrler) in the period from 1910 to 1920

WILLE (G)

Lofquist E Central Tears of the Perineum (Bertrag zur Frage der zentralen Dammrisse) *Acta obst et gynec Scand* 1929 viii 138

The author reviews 32 cases of central tears of the perineum reported in the literature and a case of his own He divides the ruptures into 2 groups central ruptures due to tension on the perineum and perforations of the vagina and perineum The former are caused exclusively by interference with dilatation of the birth canal due to anatomical lesions or anomalies of the perineum or insufficient time for dilatation The latter are caused by rupture of some part of the pelvic muscular body combined with too swift progress of the fetus into the vagina

Both types occur in primiparae more frequently than in multiparae In the cases of multiparae there is always some cicatricial alteration of the perineum due to a previous confinement

The shape of the pelvis is of no importance in the occurrence of central ruptures of the perineum

Hawks E M The Maternal Mortality in 582 Abdominal Caesarean Sections *Am J Obst & Gynec* 19 9, xviii 393

In 532 abdominal caesarean sections performed in a single hospital by a large number of obstetricians

during the past nineteen years there were 22 deaths a mortality of 3.6 per cent These deaths constituted 16 per cent of the total obstetrical mortality In the last few years a better choice of the type of operation has kept the mortality down in spite of the fact that caesarean section has been performed more frequently

LOALAI in discussing this report, stated that he had under observation 5 patients who had been operated on by the West Fromme technique In all of these cases the uterus is well above the umbilicus and complaint is made of metrorrhagia The frequency of peritonitis has been decreased by the adoption of a flap operation of the Beck, Kroenig or DeLee type Local anaesthesia can be used with very little difficulty

BECK said that the low operation offers considerable protection against peritonitis and the classical procedure should be limited to cases in which time is an important consideration E L CORNELL MD

PUERPERIUM AND ITS COMPLICATIONS

Tansinsin M S A Statistical Study of Puerperal Morbidity in Hospital Practice *Am J Obst & Gynec* 1929 xvii 98

On the basis of the rigid standard of the British Medical Association, the morbidity in 446 obstetrical cases treated in St Margaret's Hospital Shanghai was 99.9 per cent This included cases of delivery by physicians not on the staff who had privileges in this hospital cases treated by midwives and physicians previous to their admission to the hospital and operative and spontaneous deliveries of all types When mercurochrome acetone alcohol solution was used in the preparation of the perineum the morbidity due to infection of the perineorrhaphy wound was only 1.56 per cent

Vaginal examination increased the risk of infection

Operative procedures were accompanied by an increase in the morbidity The morbidity was highest after caesarean section

Obstetrical morbidity due to pyelitis was high 2.46 per cent Morbidity due to phlebitis occurred in only 1.13 per cent of the total number of febrile cases The morbidity decreased with each subsequent pregnancy

Lactation seemed to be a factor in the causation of puerperal morbidity E L CORNELL MD

MISCELLANEOUS

Eden T W The National Inquiry Into the Causes of Our High Maternal Mortality Rate *Brit M J*, 1929 ii 81

Eden states that the important problems as to the conditions determining the occurrence of puerperal infection the causation of the toxæmas and the haemorrhages of pregnancy, and the steps required to provide better and longer practical training in midwifery for medical students and midwives could not

be closely investigated by this inquiry and until they are solved we can hardly expect to make any marked change in the figures of maternal mortality which have for so many years caused the members of the medical profession the greatest concern and have now roused the conscience of the nation itself.

According to the findings of the Aberdeen inquiry, the maternal death rate of the unmarried mothers is more than double the total rate and the mortality from sepsis is 3 times as high as the total maternal death rate from sepsis.

With regard to the health of the mother during pregnancy the Aberdeen records from the antenatal departments show that in general 80 per cent of expectant mothers are classed as being in good health. Of those who died in the period covered by the inquiry only 40 per cent were classed as having good health.

The advantages of antenatal supervision were confirmed by the fact that the death rate among women who attended antenatal clinics was approximately only one half of that among those who did not attend such clinics (3.8 and 7.4 per cent respectively).

The total number of maternal deaths in the city from all causes in the period of ten years was 6.6 per 1,000, a figure rather higher than the average for England and Wales. The number of maternal deaths in the 120 cases for which the institutions were directly responsible reached the astonishing figure of 14.9 per 1,000. The corresponding number among patients attended in the hospital districts was 5.6; that among patients attended privately by doctors 6.9; that among patients attended by midwives only 1.8; and that among patients attended by midwives with medical assistance 2.5. The death rate from sepsis was remarkably high also among women delivered in institutions and for whose care the institutions were solely responsible. The general mortality rate due to sepsis in Aberdeen during the period of the inquiry was 1.5 per 1,000, about the average for the whole country. In the remaining groups just specified it was below the average, attaining the lowest point of all in the cases of women attended in the hospital districts, among whom the rate was only 0.7 per 1,000, that is, less than half of the general septic rate. The report does not distinguish the results in private nursing homes from those in other institutions. Thus the institutional death rate from albuminuria and convulsions is more than 2½ times as high as the general rate for that condition in the city (no emergency cases being included) the rates being 2.7 and 1.0 per 1,000 respectively. Also the death rate from hemorrhage is more than double the general rate for that condition (1.4 and 0.7 per 1,000). As the report does not distinguish between antepartum and postpartum hemorrhage the obstetrical significance of the latter figures is not very clear.

It is evident then that the death rate from sepsis in the institutions was exactly 3 times as high as the death rate from that condition in the whole city (4.5

and 1.5 per 1,000). For this fact no explanatory circumstances are mentioned in the report.

The instructive findings of this report are (1) the evidence suggesting that the general health and perhaps also the physique of the mother has more influence upon maternal mortality than has been believed heretofore, and (2) the relatively high mortality from all causes among women whose confinement had been managed throughout in the inpatient departments of hospitals and other institutions.

A considerable part of the report deals with the causation of puerperal infection. The bacteriological work confirms the view, now almost universally accepted, that a hemolytic streptococcus is the causative organism in all but a small minority of cases. The question as to how this organism gains access to the maternal passages is discussed. The theory that streptococci may make their habitat in the cervical and vaginal secretions during pregnancy and after labor may become active and invade lacerations or the placental site is dismissed as being applicable to only a very small proportion of cases. We are told that the natural habitat of the hemolytic streptococcus is the throat. Great importance is attached to the possibility of droplet infection, that is infection of hands, instruments or appliances by droplets of saliva expelled in speaking or coughing from the mouth of a carrier of the hemolytic streptococcus. In support of this view it is mentioned that in January, 1928, an outbreak of puerperal fever occurred in a maternity institution in Aberdeen. Of the 12 women who became infected 4 died. The outbreak was found to be due to the hemolytic streptococcus. Simultaneously there was an outbreak of icterus neonatorum which proved fatal in 7 cases, and in 2 of the fatal cases the hemolytic streptococcus was proved to be the cause of the infant's death from septicæmia. In 5 of the throat cultures taken from the 12 nurses in the institution the hemolytic streptococcus was found. Seventeen contacts among patients were also examined with the result that 10 of them hemolytic streptococci were found in either the throat or the uterus or both. Accordingly 8 of 17 persons examined were found to be carriers.

In considering puerperal sepsis we must face the fact that in institutions this disease still assumes epidemic form although the outbreaks are not comparable in extent or severity to those which devastated lying-in hospitals so frequently in pre-antiseptic days.

It would appear that the provision of adequate facilities, whether public or private, for the isolation of all septic cases must be regarded as essential and that isolation must be effected immediately, as in the case of all other notifiable infectious fevers, for every day's delay multiplies the risks. In fact, an isolation block is essential in a properly equipped maternity hospital.

The report has been able to differentiate between the cases attended by doctors and those attended by midwives. From a comparison of the results it ap-

pears that the doctors' cases showed a general maternal mortality rate of 6.9 per 1,000 and the midwives' cases a rate of only 2.8 per 1,000. Attention has been called by Dame Janet Campbell, in the Ministry of Health reports, to the fact that the returns of midwives' cases in many localities show a death rate well below the average maternal death rate and Fairbairn has shown that the picked body of midwives who work for the Queen Victoria's Jubilee Institute for Nurses has achieved even better results than those disclosed by the Ministry of Health and that their results are progressively improving.

Midwifery has long been regarded as an essential subject in the examination for registration as a medical practitioner and has taken its place alongside medicine and surgery in the foundations of medical education. To withdraw it from the sphere of the general medical practitioner would be to change its status as a basic subject in medical education and would deprive the practitioner of work which he can undoubtedly be trained to do with success and with advantage to the community.

It would indeed constitute a serious indictment of the medical profession if the opinion became established that partly trained women are more successful in the management of normal obstetrical cases than are fully trained obstetricians.

CARLH DWYER, M.D.

Gibberd, G. F. A Contribution to the Study of the Maternal Death Rate. *Lancet* 1929, CCXXII, 533.

This study is based on a comparison of the midwifery in the Guy's Hospital Maternity District as it is today and as it was sixty years ago.

In the twelve years from October 1863 to September 1875 the total number of women delivered was 23,501. There were 106 deaths, a maternal mortality of 4.4 per 1,000. If this figure is compared with the present day mortality rate for the country as a whole the conclusion might be drawn that the

advances in midwifery during recent years have led to no decrease in the dangers associated with childbirth. Such a conclusion, however, is not necessarily correct as the comparison is unfair. A much more comparable series is that of the 21,423 district cases of delivery in the ten years from 1919 to 1928 inclusive. This number includes the cases of all women domiciled in the Guy's Hospital district and delivered by the hospital, whether the delivery took place in the patient's own home or in the hospital.

These 2 series of cases have been compared with reference to the maternal mortality rate. The difference between them is mainly that the one represents midwifery practice sixty years ago and the other represents modern practice. In all other respects the 2 groups are as nearly as possible identical and any differences between them are to be attributed to inevitable changes in social conditions. By limiting the cases to patients domiciled in a compact district the distortion usually present in patient figures has been eliminated and by including the

cases of all patients who though domiciled in the "district," were nevertheless delivered in the hospital the distortion usually present in out-patient figures has been avoided. The series may therefore be regarded as a fair average sample of the general population at least of the particular social class represented by residents in the Guy's Hospital district.

The maternal mortality rate in the last sixty years has fallen from 4.4 to 1.03 per 1,000 and this improvement can be traced directly to changes in obstetrical methods. The changes in practice have resulted in an increase in the amount of interference but even so the frequency of interference at the present time is less than 9 per cent. It is contended that the increased interference up to this point is justified by the results obtained and that it may be an important factor in diminishing the death rate by eliminating those cases of profound obstetrical exhaustion that must have occurred sixty years ago. It is to our improved aseptic and antiseptic technique that we must attribute the fact that, in spite of the much greater frequency of interference, the danger of subsequent sepsis has been very much reduced. In cases of spontaneous labor the conscientious use of a simple antiseptic technique and strict attention to the principles of isolation have practically abolished sepsis as a cause of death.

Antenatal care has reduced the death rate in cases of disproportion and malpresentation, has made eclampsia a rare disease and has improved the general health of the patient during pregnancy so that she is better able to face the risks of labor and the puerperium.

The use of intravenous saline or gum saline solution or of blood transfusion has contributed largely to the reduction in the death rate from postpartum hemorrhage and placenta previa but concealed accidental hemorrhage accounts for practically as many deaths as in former years and the cause of death in these cases seems to be a profound toxæmia which we cannot treat. In spite of the enormous amount of study that has been spent on the toxæmias of pregnancy since Galabin's time, treatment for this condition when it has once developed (whether in association with accidental hemorrhage or as eclampsia) is as ineffective as ever. Apart from the experience gained from periodical swings of the pendulum from radical to conservative lines of treatment, there is nothing of fundamental importance to add to the treatment of sixty years ago. We have succeeded in preventing eclampsia to a great extent but we must not therefore imagine that we have advanced in our treatment of the condition when it has once developed. Under present conditions of practice an occasional case of fulminating eclampsia or of concealed accidental hemorrhage occurs in spite of reasonable antenatal care and it is in the treatment of such cases that modern methods have proved so disappointing. To prevent a disease is certainly better than to treat it but until it is possible to prevent every case of severe toxæmia there is still a need for efficient treatment.

In the cases of delivery in the period from 1863 to 1875 the death rate from intercurrent diseases was 0.32 per 1 000 whereas in the cases of delivery in the period from 1919 to 1928 it was 0.24 per 1 000 showing that antenatal care has been unable greatly to benefit the pregnant woman who is already seriously ill with some other disease. This is to be expected since in such cases it is impossible to regard child bearing as anything more than a contributory factor in the fatal outcome and we cannot expect antenatal treatment to cure the primary disease. The close approximation of the figures in the 2 groups is interesting in view of the question of the reliability of national mortality figures. How far do such figures include deaths from intercurrent disease? It is suggested that 0.3 per 1 000 may be taken as a true measure of the deaths from non-obstetrical causes in an average unselected practice. If this is true it is obvious that these cases become a serious factor only when the total mortality rate is very low.

CARL H. DAVIS, M.D.

Solomons B Taylor W A Browne O D Bourke
F S and Others. Reports of the Rotunda
Hospital. *Irish J Med Sc* 1929 69 329

During the year from November 1 1927, to October 31 1928 2 346 cases were admitted to the wards of the Rotunda Hospital 2 061 women were delivered and 1 717 women were attended at their homes. In the last group there were 4 deaths—2 from lobar pneumonia, 1 from sepsis on the sixth day (the baby was born before the arrival of the attendant) and 1 from central placenta previa.

In 128 forceps cases there were 9 stillbirths. Four deaths followed the administration of quinine and oil. Pituitrin is rarely given in the second stage of labor, but is considered of value in certain cases of delayed second stage.

Albumin was found in the urine in 636 cases.

There were 18 cases of definite eclampsia with 1 death (a mortality of 5.5 per cent) and the delivery of 13 live babies. The fatal case is discussed in detail.

The submammary injection of saline solution is regarded as very necessary in cases of accidental

hemorrhage. In 41 cases of hemorrhage there was 1 death a mortality of 2.4 per cent.

In the 16 cases of placenta previa there were no maternal deaths but the fetal mortality was 61.1 per cent.

In 58 cases of uterine inertia there were 2 deaths.

Cesarean section was done 43 times. In 1 case a minor cesarean section was done for the removal of a tumor. The classical operation was performed in 24 cases and the low section in 19. Twelve of the sections were done on account of previous section. The indications were disproportion in 33 cases, placenta previa in 1 case, prolapse of the cord in 2 cases, heart disease in 2 cases, contraction ring in 2 cases and vaginal tumor in 1 case.

The authors emphasize the value of the lower segment operation. They believe that since the introduction of this procedure pubiotomy has few indications. In the cases reviewed 2 pubiotomies were done with 1 death.

Twelve destructive operations were performed. The indications were disproportion alone in 4 cases, disproportion and hydrocephalus in 1 case, hydrocephalus alone in 2 cases and contraction ring disproportion with hemorrhage fetal ascites neglected shoulder presentation and a dead fetus and uterine inertia in 1 case each.

In 125 forceps applications there was 1 maternal death.

There were 4 cases of rupture of the uterus. Recovery resulted in all.

Labor was induced 94 times—with quinine and oil in 43 cases, by bougie in 19, by tents in 13, by puncture of the membranes in 10, and by quinine oil and bougie in 9. The use of quinine and oil is regarded as the best method if absence of danger can be established.

In 17 cases of prolapsed cord 12 live babies were delivered. In 1 case cesarean section was done.

There was morbidity in only 36 cases in which delivery occurred without operative interference and in most of these it was not severe. Extrapelvic morbidity was present in 30 cases.

In all there were 16 maternal deaths. The fatal cases are reported in detail.

V. H. GLADDEN, JR., M.D.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Claser M A and Kutzmann A A Emulsified Campidol as a Pyelographic Medium *Ann Surg*, 1929 xc 270

The authors review the history of the development of opaque X ray media for use in the body cavities from bismuth colloid silvers, thorium citrate and halogen salts to campidol, iodized rapeseed oil in the form of an emulsion.

In the selection of an opaque medium it is necessary to consider the atomic weight, specific gravity, concentration and total thickness. The most important factor is the atomic weight. That of silver, 107.7, represents about the limit.

In the author's studies saturated solutions of thirteen elements were made up in distilled water and compared with 5 per cent sodium iodide. When the shadow casting property was less than that of sodium iodide the solution was discarded. When it was more the solution was tested for toxicity. The element of choice was iodine, the atomic weight of which is 126.9. Compounds of iodine cast adequate shadows in low concentration and are readily soluble and of low toxicity. The organic compounds of iodine were discarded because they were too toxic, and many iodized oils such as fish oils and almond oil proved to be too irritating.

Calza oil, campidol or iodized rapeseed oil with a specific gravity of 0.914 has a saponification value of from 167 to 178, an iodine value of from 93.5 to 105.6 and a viscosity of 250 at 100 degrees F. Its elemental iodine content is 43 per cent. It deteriorates slowly on exposure to light or heat and casts an intense shadow. Its toxicity is very low and it causes extremely little irritation.

Straight iodized oil is too viscid and non miscible. Emulsions reduce greatly both of those undesirable properties. The best emulsions are made with acacia. A stable emulsion consists of one half acacia and one half iodized oil. This preparation is put up in 10 sterile sealed ampoules and is sterilized by pressure at 100 degrees C. The product is miscible with water and of low viscosity. It gives an excellent shadow and does not precipitate with urinary salts. It has been used successfully in twenty five cases and is as satisfactory as 12.5 per cent sodium iodide. BENJAMIN F. ROLLER, M.D.

Fleischman A G and Anderson B Infantile Kidney *J Am W As* 1929 xciii 12

Infantile kidney is rarely described in the literature. It has been designated as congenital atrophic kidney and renal hypoplasia. The possible presence of the condition must be thought of whenever renal surgery is contemplated. From the

embryological viewpoint infantile kidney is generally believed to be due to arrested fetal development. There is ample evidence that atrophic changes in a kidney may result from various diseases but it is extremely difficult to differentiate between the small kidney due to a pathological process and the atrophic kidney due to congenital maldevelopment.

The infantile kidney varies in size from that of a small bean to that of a walnut. Its location is usually the same as that of the normal organ. Its pelvis may be similar to the normal pelvis. In some cases it may have only a single calyx and in others multiple small calyces. Histologically the infantile kidney resembles the normal kidney except for a decrease in its cortical area and a marked deficiency in the number of glomeruli.

The clinical diagnosis is not easy. Frequently there are no symptoms definitely suggesting the condition. The roentgenogram is seldom of assistance because of the extreme difficulty in obtaining a proper outline of greatly reduced kidneys. Cystoscopy and pyelography and the usual standard functional test are of practical value. The bladder is usually negative unless some concomitant condition is present. The ureteral orifices are also usually negative although atrophic changes of the circular muscle about the meatus have been described. Examination of the urine obtained through a ureteral catheter from the infantile kidney may be negative with the usual chemical and microscopic tests unless some lesion is present. The amount of urine is usually considerably decreased but the decrease may be due to reflex inhibition following cystoscopy. On the other hand, the other kidney will secrete proportionately more urine in compensation. The dye output from an infantile kidney is always greatly diminished in amount while that of the opposite kidney is increased. The appearance of the dye from the infantile kidney is delayed while that from the opposite kidney is usually normal. An outstanding characteristic of infantile kidneys is their ability to concentrate uric within normal limits although they are not capable of full function.

Pyelography is of value but it must be borne in mind that the size of the renal pelvis is usually not a reliable index of the size of the kidney. The renal pelvis and calyces are exceedingly diminished in size compared with the normal. The pelvic outline may be completely effaced or the pelvis may have a normal shape and average size and the calyces may be more or less obliterated. The kidney may be so undeveloped that the pyelogram may be of no aid. It is difficult at times to differentiate this anomaly by pyelography from renal tuberculosis, renal tumors and chronic inflammatory lesions.

The decision with regard to surgery on a diseased kidney when the other kidney is infantile must be made cautiously because of the inability of the infantile kidney to undergo compensatory hypertrophy

LOUIS NEWELL M D

Verney E B The Value of Physiological Tests of Renal Function *Brit Med J* 1929 ii 129

Verney distinguishes two types of renal reserve—the anatomical and the functional. The anatomical reserve is determined by the number of renal units in the kidney, which is roughly 1,000,000. It has been definitely proved that man is supplied with many more of these units than is necessary to meet the normal needs of the body. It has been proved also that the glomeruli work fractionally. The functional reserve is determined by the magnitude of the pressure stimulus to secretion and the tone of the secretory unit. It has been shown experimentally that there is a distinct relationship between the number of renal units and the magnitude of the pressure stimulus. A diminution of the anatomical reserve of the kidney is always partially or completely compensated by encroachment upon the functional reserve. This fact is of importance since the secretion of urea and substances eliminated by a similar mechanism depends mainly upon the amount of kidney substance while that of chlorides depends upon the rate of urinary flow.

Theoretically there are three types of renal failure corresponding to the primary involvement of one of these reserve factors. The most serious is a diminution in the number of renal units. Renal failure dependent upon the pressure stimulus and the tone of the secretory units may be temporary and amenable to treatment.

As caffeine increases the action of the glomeruli the use of this drug as a test might give some indication of the magnitude of the renal reserve power.

The use of urea or phenol red is advisable as a test in cases of renal disturbances when their elimination under similar conditions by the normal kidney can be used for comparison and will indicate the reserve of the kidney.

ELMER HESS M D

Boeckel A Two Cases of Renal Tuberculosis with Closed Lesions Shown by Pyelography (*Deux cas de tuberculose rénale avec lésions closes révélées par la pyélographie*) *J d'uról méd et chir* 1929 xxvii 343

The first case reported by the author was that of a woman who entered the hospital on account of a staphylococcus perinephritic abscess. Operation was followed by slightly defective function of the kidney with persistence of a fistula. Pyelography then showed absence of the upper calyx suggesting exclusion of the region of this calyx. Nephrectomy verified this theory. The kidney showed several cavities in the upper pole, the largest one the size of a cherry. The cavities were filled with thick pus and surrounded by a caseous tissue lined with a sclerotic membrane. None of them communicated with the

pelvis. The exclusion of the diseased part of the kidney was complete.

In the second case the exclusion was in the process of development. The patient was a man thirty-four years of age who had suffered from intense cystitis with pyuria for about three years. During the past four months the kidney and bladder pain had stopped and the urine had become clearer.

Examination showed definite tuberculosis of the right kidney with pus and bacilli but as the function of this kidney was very good it is probable that the lesions were slight and recent. The left kidney was a deficient tuberculous organ. Clinical examination and pyelography indicated that the lesions of the left kidney were undergoing exclusion as there was no pyuria and the middle and lower calyces were lacking in the pyelogram. ARTHUR G. MORRIS M D

Hunt V C The Method of Metastasis of Papillary Epithelioma of the Renal Pelvis *Surg Clin N Am* 1929 ix 633

The pathologists of the Mayo Clinic have grouped all kidney neoplasms into four groups, namely, hypernephromata, carcinoomata, epitheliomata and sarcomata. Of these tumors all of which are highly malignant, the papillary epithelioma of the renal pelvis is the least dangerous as is evident from its cellular characteristics: extension and metastasis (hypernephroma, sarcoma, and carcinoma infiltrate the neighboring tissues and produce early remote implantations by way of the renal vein). The papillary epithelioma does not infiltrate, but progresses by direct extension or implants along the mucous membrane of the pelvis and calyces of the kidney, the ureter and the bladder.

In a review of the cases of primary papillary epithelioma of the renal pelvis observed at the Clinic it was found that bladder metastasis occurred in two thirds being present either at the initial cystoscopic examination or following nephrectomy or nephrectomy with partial ureterectomy. As the ureter was found involved on numerous occasions, partial ureterectomy was performed when the diagnosis of papillary epithelioma was made previous to or at the time of operation. Nephrectomy with partial ureterectomy is sufficient for the other malignant tumors of the kidney, but was found to be insufficient in cases of papillary epithelioma even when the ureter was removed at the base of the bladder. Experience has taught that the intramural portion of the ureter must be removed and that when the mucous membrane adjacent to the ureteral orifice is involved, resection of the bladder wall 1 cm. beyond the area of extension is necessary. Up to the present time no recurrence has developed in cases in which this technique was employed.

Pack G T and Buzzanca R Experimental Production of Epithelial Hyperplasia of the Renal Pelvis *Am J Surg* 1929 xlii 221

The authors introduced rough sterile pebbles into the pelvis of the left kidney of a series of rabbits to

observe the effect of the presence of these stones on the renal epithelium. The animals were sacrificed after periods varying in length up to one hundred seventy seven days.

In 50 per cent of the calculous pelves some degree of epithelial hyperplasia could be seen microscopically. In the cases of three rabbits definite papillomatous hyperplasia occurred. The degree of change in the renal epithelium was directly proportional to the length of time the pebbles were in the kidney.

The authors conclude that hyperplasia of the transitional epithelium of the renal pelvis is a frequent and early response to the presence of renal stones. Occasionally benign villous papillomata of the renal pelvis follow irritation by renal stones. They occur later than the more frequent simple hyperplasia. Urinary stasis is suggested as one of the factors involved in the genesis of tumors in the renal pelvis.

HENRY L. SANFORD, M.D.

Gruber, C. M. The Ureterovesical Valve. *J. Urol.* 1920 xxii 375

Gruber states that reflux of urine from the bladder into the ureter is readily caused in experimental animals and may occur in man and in dogs when the ureteral orifices are injured. Under normal conditions the oblique passage of the ureter through the bladder wall serves as a sphincter to prevent it. In the normal bladder of man and the cat, dog, pig and monkey reflux does not occur unless the pressure is excessive and the volume of fluid exceeds that normally found in the bladder. In the rabbit the fibers which loop over the urethral orifice from Bell's muscle are poorly developed or missing.

In the author's experiments destruction of the intravesical ureter permitted reflux of fluid from the bladder to the ureter in all cases except one. Over dilatation of Bell's muscle pulled the ureterovesical valve toward the urethra and bladder wall and opened the urethral sphincter. ELMER HESS, M.D.

BLADDER URETHRA AND PENIS

Temkin, I. Tumors of the Urinary Bladder (*Staro blavengeschwulste*). *Verhandl. d. Kong. Russ. Urol. Leningrad* 1927

Of 150 tumors of the urinary bladder which were seen in the urological clinic of the University of Moscow 138 occurred in males. All were of an epithelial character. In 13 cases the appearance of the neoplasm had been preceded by a long continued local affection. In 2 cases there was a bladder stone. In 3 cases a urethral stricture with secondary cystitis. In 2 cases trauma to the bladder, in 1 case prostatitis and in 1 case an ulcer at the site of the subsequent tumor. Three of the patients were aniline workers. Heredity was a factor in 30 cases (6.66 per cent). In 1 case there was a simultaneous tumor elsewhere (carcinoma of the stomach).

In 40 cases the tumor was in the region of the ostia. In 34 cases in the trigone and fundus. In 32 cases in the neck of the bladder. In 38 cases in the

lateral wall and in 22 cases, in the upper wall. A single tumor occurred in 101 cases. Double tumors in 17 and multiple growths in 27. The number in 5 cases is not recorded. Multiple papillomata occurred in 18 per cent of the cases.

According to the usual classification 53 of the neoplasms were benign and 66 were malignant. The nature of 29 was undetermined. Several clinically benign tumors were shown on histological examination to be cancers. In 1 case there was malignant degeneration of a tumor which had been benign for eighteen years. Recurrences had a more malignant course than primary tumors.

In the majority of the cases hematuria was the first sign. In 7 cases it was absent macroscopically and in 2 it was absent microscopically. Wide spread metastases were not observed. In some cases there was involvement of the retroperitoneal lymph glands. The low incidence of metastasis and the late development of cachexia are explained by the relatively poor lymph vessel supply of the bladder. E. BAYNER VOIGT (Z).

Kreuzenburg, Helffer, Fedorov, Hagen-Torn and Others. Discussion on Tumors of the Bladder (*Aussprache zum Hauptthema: Geschwulste der Harnblase*). *Verhandl. d. Kong. Russ. Urol. Leningrad* 1928

KREUZENBURG (Leningrad) said that he had obtained no diagnostic aid from the Botelho test.

HELFER (Kiev) reported that the Botelho test was done on 918 patients at the Medical Clinic of Kiev. Of 242 cases of carcinoma it was positive in 90.5 per cent and of 676 cases of non carcinomatous conditions it was positive in 14 per cent. In the urological division of the same institution it was positive in more than half the cases of carcinoma. Hematuria and pyuria do not influence the result.

FEDOROV (Leningrad) reported that partial resection of the urinary bladder was followed by recurrence in from 80 to 85 per cent of the cases and gave good results only when the bladder wall alone was involved. When the lesion is situated in the trigone or the neck of the bladder total extirpation is absolutely necessary. The end results of radium treatment are not yet known. In extirpation of the bladder in women the operation may be facilitated by previous dissection of the urethra through the vagina and its ligation and invagination into the bladder. Early diagnosis and operation are the chief requisites for success.

HAGEN-TORN (Leningrad) stated that he is not satisfied with the reported results of endovesical treatment and emphasized the good results of operative treatment. In cases of malignant tumors he has found the extraperitoneal extirpation of the bladder according to the Fedorov method of great value.

LEVINSKIY (Moscow) reported that he had seen good results in 40 cases treated by electrocoagulation. He does not approve of chemical coagulation (19 cases). At autopsy in 12 cases of carcinoma he found the cause of death to be sepsis, septic pneumonia.

involution of the prevesical tissues and metastases from prostatic involvement

VASCEVIC (Moscow) proposed that every person forty years of age should be examined cystoscopically in order that bladder tumors may be discovered early. He has seen no good results from partial resection.

ALAPIN (Charkov) advised the use of 10 per cent resorcin to prevent dissemination of the tumor cells during operation.

SURTEY advocated a two stage transplantation of the ureters.

MARTYNOV (Moscow) reported a case in which extirpation of the bladder was followed by freedom from recurrence for two years.

MICHADZE (Tiflis) stated that of 20 cases treated by electrocoagulation good results were obtained in 15. SOLOVIOV (Moscow) and CHAZANOV (Moscow) each reported a successful extirpation of the bladder.

VASILJEV (Leningrad) recommended electrocoagulation for benign and transitional forms of tumor. MURTYJANC (Moscow) stated that he has obtained better results from chemical coagulation with collargol than with trichloroacetic acid.

CHOLCOV (Leningrad) concluded on the basis of his own experience that when electrocoagulation is employed all papillomata should be considered benign.

LEZNER reported on 2 cases of bladder extirpation under lumbar anesthesia in which good results were obtained. 1. BIANCA VOIGT (2)

Hermann H. B. Metastatic Tumors of the Urinary Bladder Originating from Carcinomata of the Gastro Intestinal Tract. *J Urol* 1919 xxii 237

The author reports a case in which five years after gastric resection an ulcerated lesion appeared on the lesser curvature of the stomach near the line of the resection and the posterior wall of the urinary bladder was found to be markedly infiltrated. Microscopic examination showed that both lesions were adenocarcinomata. Examination of the lumbar lymphatic gland revealed no indication that the carcinoma traveled by the lymphatic route.

In ten cases of carcinoma of the gastro-intestinal tract in the male which are reported in the literature metastasis to the urinary bladder occurred once, and in twelve cases of Krukenberg tumors it occurred six times. The metastasis of tumors of the Krukenberg type to the ovary and bladder is believed to take place in a retrograde manner by way of the lymphatics.

The local functional disturbances in the bladder caused by a metastasis depend upon the portion of the bladder that is involved. ELMER HESS MD

Hinman F. The Surgery of Tumors of the Bladder. *California & West Med* 1919 xxii 110

Hinman says that the latest epochal advance in the surgical treatment of tumors of the bladder was Beer's introduction of fulguration in 1910. The newest treatment irradiation, has been overrated as

the result of hopeful enthusiasm. Progress in the cure of malignancy of the bladder by means of it has now reached a deadline.

In the treatment of tumors of the bladder surgery must always be considered in close relationship to both fulguration and irradiation. All bladder tumors are potentially malignant. The degree of malignancy depends largely on how extensively the neoplasm infiltrates the bladder wall.

In the diagnosis several cystoscopic examinations may be necessary. The cystoscope will show whether the tumor is papillary, pedunculated or sessile. Ulceration and infiltration are reliable indications of malignancy.

Primary adenocarcinoma of the bladder is rare. The secondary form is pedunculated.

Human subjects all papillary villous growths to fulguration. In cases of malignant papilloma and papillary carcinoma fulguration often results in cure. It may fail to effect a cure if there is marked infiltration, and will probably fail unless it is successful at the first application. If the tumor is resectable surgery should be resorted to next even if ureteral transplantation will be necessary. If it is not resectable radium or transurethral diathermy should be used. If the tumor is flat and infiltrating and shows a crater ulcer fulguration will not avail and radium irradiation or surgery is indicated.

Surgery of the bladder is described as radical therapeutic, or palliative. Radical surgery is complete removal of the tumor or even of the bladder with transplantation of the ureters. Therapeutic surgery is done for the open treatment of tumors. Palliative surgery is performed for the relief of urinary obstruction.

The high mortality of bladder surgery is due not only to the condition for which the surgery is done but also to defects inherent in the operation. The surgical trauma and difficulty of drainage are sometimes as great in cystotomy as in resection. An important factor militating against recovery is ureteral abnormality. In practically all cases of postoperative death pyelonephritis, pyonephrosis or pyelonephritis is found.

The author has no faith in radium treatment of deeply infiltrating tumors as none of his patients subjected to it for such growths survived for longer than a year. He believes that when fulguration fails resection or cystectomy should be done.

The operative risk of resection in cases of bladder tumors is greatly reduced by careful preparation of the patient, measures to assure ureteral patency and eliminate infection and dependent drainage.

BENJAMIN F. ROLLER MD

Campbell M. F. Stricture of the Male Urethra. The Prognosis as Based upon a Study of 1344 Cases. *N York State J M* 1919 xxii 1135

The prognosis of stricture of the male urethra depends upon the character of the inflammatory scar and the thoroughness of treatment. The intelligent use of steel sounds will cure the condition

in a few cases and will control it in all. In the presence of periurethral infection impassable strictures, or strictures which do not respond properly to the use of sounds operative procedures are necessary. It should be impressed upon the patient subjected to urethrotomy that the operation is only a step toward the cure. Urethral dilatation must be begun soon after the operation and must be continued until the urethra remains dilated. Even then, it is important that sounds be passed two or three times a year. Of patients not treated in this way, a third will require re-operation and a fourth of this number will require re-operation within ten years.

In the determination of the prognosis in a given case the renal function and the presence or absence of renal complications must be taken into account.

LOUIS NEUWELT M D

Martin Laval: The Late Result of a Urethroplasty 10 Cm. In Extent After Traumatic Rupture of a Constricted Urethra (Résultat éloigné d'une urethroplastie sur une longueur de 10 centimètres après rupture traumatique d'un urètre rétréci) *J. de med. med. et chir.* 1909, 340.

The case reported was that of a man fifty four years of age who fell astride an iron beam. A few hours later during the night the scrotum swelled and a few drops of blood were passed at the beginning and end of micturition. The next day the patient had a chill and fever.

The author made a diagnosis of rupture of the perineohulbar part of the urethra with acute periurethritis. He advised immediate operation but the patient would not consent to it. Three days later the patient was admitted to the hospital with extensive gangrene of the scrotum and oedema of the perineum. Operation showed a perforation on the right lateral surface of the bulb about 6 cm. above the cul de sac. This was evidently the site of the rupture. There was also a stricture of the urethra which would admit only a filiform bougie. The bougie was stopped completely 1 cm. above the perforation.

After the signs of infection had disappeared the author made persistent attempts to dilate the stricture but was unsuccessful. The stricture seemed to be in the form of a solid cuff rather than a series of consecutive rings as is generally the case. Under spinal anesthesia the author lengthened the urethrostomy incision to include all of the penile urethra and after having destroyed the hair of the adjacent skin by diathermy he reconstructed a urethra with skin flaps. The length of the reconstructed urethra was 10 cm. When cicatrization was complete and the cystostomy wound closed the urethra admitted a No. 22 bougie. Today, three years after the operation it readily admits a No. 41 Benique bougie.

In this case the indication for urethroplasty was absolute because of the impossibility of dilating the urethra. A medicolegal question was involved since while the rupture was certainly caused by the industrial accident the patient had an old gonorrhoeal stricture which involved the danger of periurethritis

at any time. Nevertheless he had been able to work up to the time of the accident. The insurance company granted him a pension of 15 per cent of his wages.

The author concludes that in cases of stricture that cannot be dilated urethrostomy is the treatment of choice, and that if necessary this should be followed by a plastic reconstruction of the urethra.

AUDREY G. MORGAN M D

GENITAL ORGANS

Wildbolz H N: The Technique of Perineal Prostatectomy and Its Clinical Results (Die Technik der perinealen Prostatektomie und ihre klinischen Erfolge) *Verhandl. d. deutsch. Gesellsch. f. Urol.* 1922, p. 148.

The author recommends perineal prostatectomy on the basis of 347 cases, emphasizing especially the importance of preserving the external sphincter muscle. After cutting of the recto urethral muscle the region of the pars membranacea and the apex of the prostate is subjected to minimal disturbance. The posterior surface of the prostate is exposed at a point 1 or 2 cm. from the apex and then the fascia of Denonvillier and the so called capsule of the prostate are split 1 or 2 cm. toward the bladder from the apex. From this incision the adenoma at its lower pole can be easily shelled out intracapsularly and so far loosened from the urethra that a transverse incision made close against the lower edge of the loosened adenoma opens the urethra behind the colliculus 1 e., bladderwards from it. The intact part of the pars prostatica urethra then retracts backward and is further protected.

The internal sphincter is more difficult to protect but may be easily re-united when the stitches are placed to unite the stump of the urethra to the neck of the bladder. The operation is completed by sewing the split capsule of the prostate lengthwise over the urethra with interrupted sutures and placing a thin perineal rubber drain through the incision into the capsule but not into the bladder. Tamponade is not used. A catheter is left in place until the third or fourth week. After its removal transitory mild incontinence sometimes occurs. This persists several weeks in only 2 per cent of the cases and longer than four months in 15 per cent.

The second danger of the operation is inadvertent opening of the rectum. This occurred in 9 of the cases reviewed. In 4 the fistula soon closed again spontaneously and in 4 it was closed by operation. In 1 case death occurred from an intercurrent disease.

The danger of hemorrhage is slight. In 1 case of ichorous cystitis a septic hemorrhage occurred.

Attention is called to the rapidity of healing. In 74 per cent of the cases the wound was closed at the end of fourteen days and in 17 per cent after three weeks. In only 9 per cent did healing require longer than three weeks. In 7 per cent it required four weeks and in 2 per cent longer than four weeks. The

mortality was 6 per cent whereas in 117 suprapubic operations it was 15 per cent.

In the discussion of this report VOLLEKER said that his method although different is also a perineal procedure. Of the sphincters, he holds the internus to be of greater importance since it maintains continence also during sleep. He stated that a circular section of the internus may be excised but that the sphincter should not be mangled or lacerated so that the ends can no longer be found.

IRUDENBERG stated that the perineal route is the best one for carcinoma of the prostate but for cases of hypertrophy he prefers the suprapubic route. He agreed with Wildbolz that the externus is the more important muscle.

LOWSLEY emphasized the preservation of the externus in the Young operation and recommended the tongue-shaped incision in the posterior lobe of the prostate which gives excellent exposure (300 operations). J. VOLLMANN (?)

MISCELLANEOUS

Bagg H. J. Hereditary Congenital Anomalies of the Genito Urinary Organs. *Am J Surg* 1929 VII 212

Bagg reports the findings of necropsies performed during a period of six years on 5600 animals in an

investigation of the susceptibility of fast growing embryonic tissues and the gonads to the effect of roentgen ray irradiation. One thousand and fifty seven of the animals showed kidney defects in 1000 of the latter one or both kidneys were missing at birth and in 48 one or both kidneys were found to be hydronephrotic soon after birth. In 17 one or both testes were abnormal. These anatomical abnormalities appeared in the descendants of roentgen ray male and female mice. They were not found in the control animals.

The same group of rats showed eye and limb defects associated with localized disturbances in the circulation. Bagg concludes that there was a temporary stage of lymphatic stasis which was soon followed by a moderate or an extensive extravasation of blood with the formation of a well defined hematoma and that the time of appearance and the extent of the hematoma determined the type and degree of the defect. The kidney and testicle defects may have been due to a similar process.

Bagg believes that his findings may have a clinical application indicating the need of caution in the irradiation of women over the region of the ovaries during the child bearing period and of men over the region of the gonads when the product of the gonads may enter into a later pregnancy.

HENRY L. SANFORD M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS MUSCLES, TENDONS, ETC

Geschickter C F and Copeland M M *Osteitis
Fibrosa and Giant Cell Tumor Irish Surg
1929 XIX 169*

This report is based on a study of over 400 cases of tumors in the giant cell group. In the authors' opinion osteitis fibrosa and giant cell tumor are phases of bone repair—the first a healing reaction and the second an active vascularizing phase. In the former there is a tendency toward spontaneous reossification or healing and in the latter a process leading to the formation of a mass of vascular tissue in which giant cells predominate. These two conditions are specific lesions of bone and are believed to be fundamental in all pathological conditions of bone.

BONE CYSTS

The solitary bone cyst is a form of osteitis fibrosa found usually in the shafts of the long bones of young adults. In the material studied there were 175 cases of bone cysts. The average age of the patients was between ten and fifteen years. This age incidence is one of the outstanding clinical features of the disease. More noteworthy than the age incidence is the location of the tumors. In the great majority of cases the lesions are confined to the upper shaft of the femur, the humerus or the tibia. At the age and in the location in which the tumors occur there is a relationship to an unossified epiphyseal line. The bone involved is an area of new bone in a metaphyseal region. Therefore the pathological process appears to be related to new bone formation. In the histological study the authors have traced such a relationship. Cases in which the solitary bone cyst is found in the region of the midshaft are explained by the longer duration of the clinical symptoms.

The patient often comes under observation because of trauma with pathological fracture. The clinical features of bone cyst are very mild. In the majority of cases pain is slight.

A ray examination revealed the ununited epiphysis near the diseased area, the metaphyseal location of the lesion and a central area of bone destruction casting little or no shadow. About the area of bone destruction the cortex is thin and expanded to form a symmetrical and fusiform swelling. In cases in which pathological fracture has occurred the margins of the fracture show new bone formation casting a dense shadow. Such a fracture tends to heal and in the process of healing the lesion frequently ossifies and disappears. The bone shell about the cyst is rarely perforated except by fracture.

The bone overlying the cyst varies in thickness the thicker shell being found in cases of long stand-

ing. Beneath the bone shell a connective tissue lining and fluid or solid fibrous tissue may be found.

The contents of the cavity give no clue to an area of new cartilaginous bone formation such as the clinical features of age incidence and location would lead one to expect. In the shell of bone overlying the cavity there is frequently a thickness and firmness extending into the fibrous lining which suggests the formation of new bone but the location indicates that it is proceeding from the cortical region of the shaft rather than from a central metaphyseal location. Except for this cortical reaction the gross specimens suggest a process of bone destruction rather than a process of new bone formation.

Microscopic examination usually shows no evidence of bone destruction which would explain the cavity formation. Most of the tissue composing the cyst wall is fairly uniform and consists of spindle cells and fibroblasts with much clear intercellular substance. About the cyst wall there is a condensation of connective tissue to form a fibrous lining. Beyond this lining layer fibroblasts are laying down intercellular substance, with the formation of osteoblasts and the direct proliferation of new bone. Occasionally giant cell areas with round cells may be seen along the cyst wall. In smaller cysts the remains of old hemorrhages may be found.

Frequently an area with fresh blood will have a mixture of round and spindle cells in the neighborhood or proximal to the new vessel. A sprinkling of large giant cells of the epulis type may be seen. This relation of round cells and giant cells to spaces of red blood cells is very significant since giant cells are associated only with new vessels and fresh hemorrhages instead of with old blood within the cysts. It is therefore probable that the order of events is (1) the formation of giant cell areas followed by new blood vessels and hemorrhage (2) absorption of the hemorrhage with cyst formation and (3) lining of the cyst by fibrous tissue which is gradually transformed into bone.

Bone of cartilaginous origin such as is seen in osteogenic sarcoma has not been observed.

The authors conclude that osteitis fibrosa is not an inflammatory reaction in fibrous tissue or bone but a process of repair constituting a natural defensive reaction of cancellous bone, cortical bone and periosteum against pathological invasion regardless of the nature of the invading lesion. In most cases the reaction is found around an evacuated area of bone destruction. The reparative nature of the reaction is evidence clinically by the benign course of the lesion and its tendency toward spontaneous healing. It appears that the process soon becomes arrested or often progresses without noteworthy symptoms for when the condition is recognized clinically and an

exploration is done the bone destructive phase is practically always complete and only the healing phase is encountered

GIANT-CELL TUMOR

Examination of the polycystic and giant cell variants of osteitis fibrosa has led the authors to the conclusion that giant cell tumor tissue is the earliest phase in the pathological process of bone cyst

Giant cell tumor is a progressive bone-destroying lesion occurring in the epiphysis where osteogenesis proceeds until late in life. In 40 per cent of the cases it occurs during the third decade of life. Its most common sites are the epiphysis of the lower end of the femur and radius and the upper part of the tibia. Although the giant cell tumor is typically benign recurrence developed in 32 of 226 cases reviewed. The patients gave a history of trauma, pain, tumor, and fracture.

The roentgenogram emphasizes the destructive nature of the condition. The lesion is usually asymmetrically located in the epiphysis. The bone destruction begins in a subcortical location at one side of the epiphysis and works its way toward a more central location at the expense of cancellous bone. The bony shell is extremely thin and in 60 per cent of the cases studied it was perforated. The tumor is traversed by trabeculae and as it becomes larger first the trabeculae and then the bony shell disappear.

Usually, the tumor mass is usually hemorrhagic. It is like an old bruise ranging in color from red to black. At operation it bleeds when touched, oozing like a sponge. Because of its asymmetrical position it borders upon cortical bone on its outer side in early lesions. Inwardly cancellous bone is infiltrated. Very rare about the tumor normal structures are endeavoring to stem the invasion. The reactive tissue shows a histological structure typical of the fibro-ostosis seen in the wall of bone cysts. Indeed, the microscopic structure of the giant cell tumor differs from that of bone cyst, not in kind but only in degree. In the former there is more giant cell tumor tissue and less fibro-ostosis, whereas in the bone cyst the fibrous proliferation and new bone construction predominate and there is little or no remnant of giant cell tumor tissue.

Histologically the tumor mass proper of the typical giant cell tumor is composed essentially of multinucleated giant cells embedded in a mass of smaller round cells. There are usually over 30 giant cells to the field and each giant cell contains from 15 to 200 nuclei. An outstanding peculiarity of the typical giant cell tumor is the cellular stroma in which the giant cells are embedded. In this stroma round and spindle cells are found but the former outnumber the latter. There is apparently a definite relationship between the round cell of the stroma and the giant cell. When the giant cells are the predominating type in the tumor the round cells prevail in the stroma. The nuclei of the giant cell always have the same general form as the nuclei of the round cell.

Hemorrhage is a conspicuous feature of giant-cell tumor. Red blood cells in a well preserved state infiltrate the tumor. The typical giant cell tumor is hemorrhagic and vascular. Areas of organizing hemorrhage are frequent. Bordering upon these is loose edematous tissue intermingled with areas of osteitis fibrosa. The spindle cells conspicuous about the new bone spicules are found also elsewhere in the tumor among the round cells of the stroma. Fine fibrils surrounding these spindle cells indicate the fibroblastic tendencies and identify them with the type of cells seen in osteitis fibrosa. When spindle cells predominate in the stroma of the giant-cell tumor they indicate a healing process and mark the section as a variant (the spindle cell or osteitis fibrosa variant of the giant cell tumor). This important group of hybrid tumors demonstrates a transitional phase between giant cell tumor and osteitis fibrosa. VICTOR F. SAVA, M.D.

Nové Jossacrand and Pouzet. The Late Effects of Acute Arthritis in the Child (Résultats Éloignés de l'Arthrite aiguë chez l'enfant). *Rev. chir.* 1930, 2511, 375.

This report is based on fifty cases of non tuberculous arthritis of the hip occurring in children under twelve years of age. In some of the cases the condition was suppurative and in others it was serous. Most of the patients were under two years of age. The authors state that arthritis may leave a variety of lesions, but before the age of nine years ankylosis is almost never observed.

Subluxations are characterized by adaptation of the head of the femur to a newly formed acetabulum at the level of the upper border of the acetabulum. Function is good and a roentgenogram shows merely slight upward and outward displacement of the femur. This lesion which is the least frequently observed, is believed to be associated with a rather benign infection.

In suppurative arthritis in early infancy there is primary bone destruction. The epiphysis disappears and the upper end of the diaphysis becomes adapted to the acetabulum. A nearthro is formed but it is poor and causes a marked limp. Occasionally after a period of years a new center of ossification appears at the site of the destroyed epiphysis. Shortening of 2 or 3 cm. is the rule and because of the laxity of the joint the gait is imperfect.

Bone destruction may be associated also with complete luxation. In such cases a nearthrosis sometimes forms, but often the femur floats without apparent means of support. Function is unsatisfactory but there is good capacity for walking.

In another group of cases the head and neck of the femur disappear entirely and the femur is reduced to a straight shaft. Occasionally the femur remains sufficiently attached to the pelvis at the acetabulum to permit a fair degree of function but as a rule operative stabilization of the hip is necessary.

Simple luxations occur without primary bony changes but alterations of the joint surfaces follow.

later as a result of adaptation. The arthritis is usually non-suppurative. In older children untreated simple luxation may result in ankylosis but as a rule a rather imperfect ankylosis forms with the femur in adduction. Except for an awkward limp function is good. By reduction perfect restoration of function may be obtained. Poor results in older children may be caused by epiphyseal separation or a fracture of the femur produced by efforts at reduction.

The treatment of these lesions varies. The roentgenogram is of little help in determining whether or not the epiphysis is destroyed. The epiphysis may be decalcified and will reappear later. Simple fixation should be reduced by simple traction during the acute phase and by careful manipulation during the first months of convalescence. In the cases of older children an attempt at reduction undertaken after six months usually results in fracture.

Lycious attitudes should always be combated. When destruction has occurred measures to prevent them usually improve the adaptation of the bones. Old dislocations are usually quite solid and require no treatment. When the destruction of bone is extensive a buttressing operation should be done.

Slight bony destruction without luxation gives rise to various functional disturbances. These are best treated by the application of an apparatus to be worn at night which maintains the member in abduction and internal rotation. The treatment should be begun early and continued for a long time to facilitate the re-adaptation of the softened head of the femur to the acetabulum.

ALBERT F. DE GROAT M.D.

Lange M. The Importance of Tension in Atrophy and Regeneration of Muscle (Die Bedeutung der Spannung fuer die Muskelatrophie und Muskelregeneration) *Ztschr f orthop Chir* 1929 li 230

It is well known that the normal tension is the decisive factor in the function of muscle. Heretofore the author assumed that the weak functioning of the calf muscles after tenotomy in which the tendon was under slight tension was due to mechanical causes a part of the power of the muscle being used up for tension of the tendon. However in experiments on animals he has found that decreased tension of the tendon may lead to marked atrophy of the corresponding muscle. Equally dangerous is too great tension. Stoffel states that under marked tension the excretion of carbon dioxide by the muscle is increased and contraction under electrical stimulation proceeds slowly and tardily. When the tension is still far ther increased atrophy begins.

In investigations regarding the extent of muscle regeneration under various degrees of tension Lange found that marked regeneration with complete replacement occurs only when the tension is normal. When the tension is too slight or too great regeneration does not occur and degeneration begins. In rabbits regeneration resulted in complete

replacement of half of the removed calf musculature in sixteen weeks.
DELS (Z)

Gauele Muscle Atrophy as a Result of the Wearing of Corsets and Bandages (Die Muskelatrophie als Folge des Korsett und Bandagentragens) *Ztschr f orthop Chir* 1929 li 223

In investigations regarding the occurrence of muscle atrophy from the wearing of apparatus belts, bandages, etc., the author found no case of irreparable atrophy of the legs caused by plaster bandages. Children cured of dislocation of the hip usually have no atrophy after three years whereas those who have not been treated show permanent atrophy. The bandages used by the author and the Hessler apparatus have not caused atrophy. On the contrary they have strengthened the musculature in paralysis since in many cases the paralyzed extremity has been enabled to meet functional demands upon it only by the application of suitable bandages.

The findings were similar with regard to the effects of a corset worn for the correction of scoliosis. Muscular atrophy was always most marked in cases of severe scoliosis. It is therefore not the corset which produces the atrophy but the scoliosis itself. Every measure even the wearing of a corset, which inhibits the development of the scoliosis inhibits the development of atrophy, and every measure which decreases the scoliosis also decreases the atrophy of the muscles.
DELS (L)

Gordon D. Observations on Impaired Shoulder Function and Methods of Treatment. *Ann Surg* 1929 30 341

This article is a resumé of the principles of symptomatic treatment of cases of disability of the shoulder joint in which the diagnosis is uncertain.

Gordon emphasizes the importance of treating all shoulder conditions with the arm in abduction and under traction. This is indicated because changes of the joint itself may lead to ankylosis and because the shoulder group of muscles must be considered. When the movement of the shoulder is restricted by permanent changes abduction is the position of choice for function. When the disability is due to extra articular factors abduction and traction are necessary to prevent the development of contraction of the adductor muscles. FLVFN J. BERNHEIMER M.D.

Patel Primary Tuberculosis of the Costal Cartilages (Tuberculose primitive des cartilages costaux) *Lyon chir* 1929 xvi 395

Patel reports the case of a woman twenty five years of age who developed a typical cold abscess on the antero inferior aspect of the thorax immediately to the right of the sternum. At operation the center of the abscess was found to be occupied by the common cartilage of the sixth, seventh, and eighth ribs. The lesions of the cartilage were analogous to those of tuberculous osteitis. Resection of the cartilage was followed by a cure that has lasted several years.
ALBERT F. DE GROAT M.D.

Gunther L. and Sampson J. J. The Radicular Syndrome in Hypertrophic Osteo Arthritis of the Spine Root Pain and Its Differentiation from Heart Pain *J Am M Ass*, 1929 xlii 514

The authors discuss the radicular symptoms in hypertrophic arthritis of the upper part of the dorsal spine on the basis of fifty cases. They state that precordial pain of nerve root origin which is commonly associated with hypertrophic arthritis of the spine, is distinguished by a close relation to movement of the spine, such as occurs in bending, raising the head on awakening, getting out of bed, sitting in one place for any considerable length of time and lifting. It is delineated in broad belt like zones along well defined spinal root dermatomes and is constantly present in back of the chest as well as over the precordium. Associated sensory changes can be demonstrated which are bilateral distributed according to spinal root zones both in front and in back and usually correspond to the entire distribution of the roots in the area of subjective sensory disturbances.

Recordal pain of nerve root origin is relieved by removal of the aggravating mechanical factors by the wearing of a mechanical appliance such as a corset or brace and by the use of a resistant surface for sleeping such as is obtained by placing boards under the mattress. It does not respond to vasodilators such as nitrites. The response to effort is good and the associated phenomena of cardiovascular disease do not dominate the picture.

GEORGE C. HENSLER, M.D.

Iltrach E. F. and Ryerson E. W. Necrosis of the Distal Epiphysis of the Right Femur *J Am M Ass*, 1929 xlii 619

The authors review the literature on epiphyseal necrosis and report a case. Among those who have written on the condition are Arxhausen, Sudeck, Kienbock, Hofmann, Looser, Schmorl and Askana. Arxhausen expressed the belief that epiphyseal necroses are anemic infarcts of the bone caused by mycotic embolic occlusion of the vessels.

The patient whose case is reported by the authors was first examined by Ryerson in 1913 when he was twenty seven years of age. He gave a history of pain and intermittent limitation of motion in the right knee for five years and had been under the care of another orthopedic surgeon.

An area of rarefaction in the lower end of the right femur was first disclosed by roentgenograms in 1921 and thereafter continued to increase in size.

At operation performed in 1927 the knee joint was resected and a long tibial graft was inserted into the medullary cavity of both the tibia and the femur. The patient made an uneventful recovery. The bone fusion healed completely in a few months.

A definite diagnosis had never been established. The conditions considered by various orthopedic surgeons up to the time of operation were tuberculosis, cyst, gonococcus infection and sarcoma.

Histological examination of the specimen revealed marked necrosis of the bone trabeculae and necrotic spicules of bone embedded in a myxomatous fibrous stroma. No bacteria were found.

The outstanding clinical features of the case were the insidious onset of the condition and the long period of time during which a disease of the lower end of the femur accompanied by inflammatory changes of the soft tissues was known to exist. The exciting cause of the lesion and the factors responsible for its continuation remain uncertain.

The case history is supplemented by roentgenograms taken before the operation and by photomicrographs.

SIDNEY SIDEMAN, M.D.

Raszeja. Some Problems in the Physiology of the Knee Joint (Einige Probleme aus der Physiologie des Kniegelenks) *Chir. Vorr. Ruckw.* 1919, 2, 21.

According to the experimental resorption and the fate of exudates of blood in joints, the resorption of solutions and colloidal emulsions in joint cavities takes place very slowly. Resorption occurs according to the laws of simple diffusion. The electrical charge of the molecules is of no importance in its rapidity or course. Intra articular exudates of blood are resorbed slowly.

Coagulation of blood also takes place in the articular cavity. The nature of the coagulation varies and is dependent upon whether the joint was in a state of rest or in motion at the time of the appearance of the exudate. A coagulation inhibiting ferment is not demonstrable in the synovia. Among other ferments, the bone catalyzing ferment of Bier and the cartilage catalyzing ferment of Hempel are mentioned. The author cites also his findings regarding lypholytic properties of joint fluid. The question as to whether these ferments originate in the blood or are organospecific has not yet been answered. The so called synovial endothelium, the mesothelium of American investigators is formed by aqueous connective tissue cells occasionally arranged in a single layer. In the very vascular subsynovial layer there are round, darkly staining mucin forming cells. Up to the present time the influence exerted by the nervous system upon the formation of synovial mucin and the osmotic processes has been but little investigated.

The author reviews comparative chemical and physicochemical studies of plasma and joint fluid, some of which were made by American investigators and others of which he made himself. He reports the values for residual nitrogen, albumin, sugar, sodium chloride, electrical conductivity and hydrogen ion concentration. These determinations were made on joint exudates of traumatic and non infectious origin. The diminution in the sugar concentration in the synovial fluid in relation to that in the plasma should be greater in non infectious joint exudates than in tuberculous exudates. An increase in the albumin content in the joint fluid (normally from 2.4 to 4.0 per cent) is followed by a diminution in the electrical conductivity, a diminution of the sodium

chloride content and an increase in the hydrogen ion concentration. The markedly alkaline Ph values of 7.8 to 8.1 are paradoxical as empirically the author has found the optimal lipase action in the synovial fluid to occur at Ph 7.8.

In Raszeja's opinion trauma leads to primary physicochemical changes that is greater permeability of the capillaries and of the synovia for albumin and hydrogen ions. As a result of these changes secondary anatomopathological changes develop.

In the second part of the article the author takes up the special mechanics of the knee joint. He states that the flexion and extension movement in the knee is a mixed movement consisting in an unrolling a gliding movement and a final gyrating extension. The unrolling motion takes place in the first phase of the movement in flexion at from 15 to 20 degrees. Its axis runs transversely in the articular cleft. The forced final gyrating extension occurs in the vertical plane at the outer side of the median condyle of the femur. The mixed movement peculiar to the knee joint is due to the incongruence of the articular surfaces and also among other causes to the tension of the ligaments.

The crucial ligaments play an important part in the mechanism of the knee joint. During flexion they allow the unrolling motion up to only about 20 degrees. In the last phase of the extension the stretched anterior crucial ligament is relaxed by the final gyrating movement maximal extension being thereby rendered possible. In extension with the leg rotated internally the crucial ligaments are put under marked tension. In both crucial ligaments it is possible to distinguish portions which have different functions. The stiffening of the knee joint in the position of extension is produced by the lateral ligaments which in gyrating movements act partly as antagonists of the crucial ligaments.

The menisci because of their elastic properties change their form almost continuously according to the pressure to which they are subjected by the joint surfaces. The median meniscus is less mobile than the lateral meniscus. During flexion both menisci change their position slipping backward on the tibial articular surface. On extension they return to their original position. At the same time they both turn upon a peculiar vertical axis around the middle turning point of the C. In addition they undergo changes in form during flexion and extension. The sagittal diameter increases during extension and decreases during flexion. Raszeja (2).

Pouzet F. Bone Tuberculosis Near the Knee Joint in Children (La tuberculose osseuse juxta articulaire du genou chez l'enfant) *Rev d'orthop* 1929 XXXVI 297

Juxta articular bone tuberculosis must be studied for each joint separately because of the variation in the action of the epiphyseal cartilage and in the ease of surgical access to the different foci.

The author reviews twenty five cases of tuberculosis of bone near the knee. In thirteen the lesion

was in the femur and in twelve in the tibia. In very young children the femur is more often affected than the tibia, and in older children the tibia is more often affected than the femur. In twelve of the cases reviewed the lesion was in the metaphysis; in ten, it was diaphyseal epiphyseal straddling the epiphyseal cartilage and in three it was in the epiphysis. Some of the metaphyseal lesions were at a little distance from the epiphyseal cartilage and others directly adjoined it. Roentgenograms are reproduced which show the rapidity with which these lesions may move away from the cartilage with growth. Diaphyseal epiphyseal lesions predominated in the femur whereas metaphyseal lesions predominated in the tibia.

At operation all of the six diaphyseal epiphyseal lesions were found to be purulent. Under a thinned or perforated cortex there was a cystic cavity which in three cases contained pus with a sequestrum and in the three others contained tissue with fungosities. In five cases the epiphyseal cartilage presented changes and in three cases the epiphysis was involved. In one case the epiphysis contained a sequestrum.

Of the eleven metaphyseal lesions four presented an encysted focus with pus and a sequestrum, three presented diffusely purulent foci and four presented poorly demarcated foci with fungosities or sequestra. In the cases in which the epiphyseal cartilage was examined it was never found involved.

Cold abscess was present in eight cases. In two of the three cases of epiphyseal lesions with cold abscess there were encysted foci with an intact epiphyseal cartilage and in the third there was a sequestrum consisting of the entire internal tuberosity of the tibia.

Clinically the onset of the osteitis is characterized by pain or cold abscess or an articular reaction. Eight of the thirteen femoral lesions and two of the twelve tibial lesions in the cases reviewed began with an articular reaction. At the onset of every case of arthritis roentgenological study is important to distinguish the articular reactions that are symptomatic of osteitis. The later course of the condition is characterized by painful swelling above or below the joint, cold abscess and articular reactions. Articular reactions are especially frequent when the lesion is in the femur. For complete healing of the synovial lesions correct immobilization of the knee is necessary even after operation.

Operation was done in twenty of the twenty five cases reviewed. In fifteen an articular reaction was absent or disappeared. Two patients died uncurd. Three had a secondary arthritis. In the cases of two of these resection was done. Of the fifteen cures fourteen have been permanent. In one case the arthritis recurred after ten years and necessitated resection. Five very young children were treated by immobilization with resultant cure and good function. Of thirteen patients who were examined later for changes in the length of the bone three presented shortening and five showed lengthen-

Gunther L and Sampson J J The Radicular Syndrome in Hypertrophic Osteo Arthritis of the Spine Root Pain and Its Differentiation from Heart Pain *J Am M Ass* 1929 XLII, 574

The authors discuss the radicular symptoms in hypertrophic arthritis of the upper part of the dorsal spine on the basis of fifty cases. They state that precordial pain of nerve root origin which is commonly associated with hypertrophic arthritis of the spine is distinguished by a close relation to movement of the spine such as occurs in bending raising the head on awakening getting out of bed sitting in one place for any considerable length of time, and lifting. It is delineated in broad belt like zones along well-defined spinal root dermatomes and is constantly present in back of the chest as well as over the precordium. Associated sensory changes can be demonstrated which are bilateral distributed according to spinal root zones both in front and in back and usually correspond to the entire distribution of the roots in the area of subjective sensory disturbances.

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CHARLES C HENSEL MD

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SIMNEY SIDEMAN MD

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trekking of the hip joints and astragalectomy or amputation above the ankle joints

In the cases of children, operation is performed whenever sufficient damage has been done to the joint to make movement incompatible with permanent safety from relapses and the patient is more than ten years of age. Exceptions are cases in which there is little granulomatous tissue and the joint surfaces are well adapted.

The author advocates extra articular reinforcement (Verrall) of the sacroiliac joint extra articular arthrodesis or excision of the hip excision and arthrodesis of the knee astragalectomy in localized tuberculosis of the astragalus and excision and arthrodesis of the shoulder.

In the cases of tuberculosis of the hip which are reviewed good results were obtained in adults but in children there were as many failures as good results. In the cases of tuberculosis of the knee in adults good local results were obtained, but the end results were poor because new lesions developed in other parts of the body. The local results were good also in two cases of astragalectomy performed on adults. In a case of excision of the shoulder and a case of excision of the elbow satisfactory results were obtained.

SIDNEY SWEDMAN, M.D.

Leriche R and De Girardier J Immediate Surgical Treatment for Sprain of the Knee Joint with a Bony Lesion That Is Visible Roentgenographically or May Be Determined Clinically (Traitement chirurgical immédiat des entorses du genou avec lésion osseuse radiographiquement visible ou cliniquement décelable) J de chir 1929 xxvii 1

It is a matter of great importance to differentiate at an early stage a simple hæmarthrosis which can be cured by puncture and movement from a hæmarthrosis due to sprain in which spontaneous cure cannot be expected because it is habitually accompanied by avulsion of bone or the rupture of a ligament. The history may be of aid. A simple fall on the knee produces simple hæmarthrosis whereas the mechanism causing sprain is torsion. Direct examination of the knee gives little exact information. A hæmarthrosis which after puncture recurs as rapidly as it first developed strongly suggests an osteoligamentous lesion.

If bone is torn out at the sites of insertion of the crucial ligaments on the tibia or femur or if there are small comminuted fractures of the tibial plateau the changes will be visible in the roentgenogram after evacuatory puncture. In the anteroposterior view the level of the intercondylar eminence will have a hazy contour and in the lateral view there will be loss of clearness of the silhouette.

When an intra articular anatomical lesion can be diagnosed from the clinical course or the roentgenogram early arthrotomy is advisable. Unless arthrotomy is done early it is probable that an operation for sequelæ will be necessary later when the conditions for success will not be as favorable.

The authors report five cases in considerable detail. The return of function was complete in three, four, and six months. The patients ranged in age from nineteen to forty two years. In four cases there was an avulsion fracture of the intercondylar eminence, and in one case the meniscus was torn away.

In the absence of sepsis the functional result of arthrotomy depends largely on the rapidity of the subsidence of the vasomotor disturbances produced by the traumatism at the level of the joint and the details of the operative technique. As a rule the active vasodilatation which is the cause of the oedema of the synovial membrane, the proliferating synovitis, the pain, the rarefaction of bone and the hypotonia of the muscle are influenced favorably by the operation but sometimes they are aggravated even when the postoperative course is otherwise perfect. In the latter type of case an external periliac sympathectomy will restore the possibility of normal function in a few days.

The extent of the arthrotomy is less important than the manner in which the operation is performed. Because of possible multiplicity of lesions the operative field must be clearly in view. The authors perform a U arthrotomy with detachment of the tibial tuberosity. The aponeurotic incision involving the fibrous lateropatellar layers is made a little outside the skin incision. In detaching the tibial tuberosity it is important to incise the fibrous tissue on each side of the tuberosity leaving attached to the bone a small fibrous lateral band sufficient for the suture. In releasing the patella it is important to prevent injury to the subpatellar fatty bundle, the suppression or laceration of which leads to the development of sclerosis with resultant loss of suppleness in the normal play of the patellar tendon. Conservative and restorative procedures on the ligaments or menisci are not advisable. If the ligament or menisci are torn or disinserted they should be removed. A fractured intracondylar eminence should be fixed in place. The simplest operations give good results. The manner in which the tibial tuberosity is detached makes it possible to dispense with metallic fixation. The fibro aponeurotic collar left on each side permits the tuberosity to be included in the aponeurotic suture.

After the operation immobilization is continued for from twelve to fifteen days. At the end of that time active mobilization is begun. The patient leaves his bed after from three to four weeks. The period of functional restoration lasts for from three to four weeks. The final condition of the joint is practically normal.

FLORENCE A. CARPENTER

Camitz H The Treatment of Flexion Contracture of the Knee by a Plastic Operation with Fascia Lata (Ueber die Behandlung, der Flexionskontrakture des Kniegelenkes mittels Fascia lata Plastik) Jtsch chirurg. Seand, 1929 lxxv 267

Flexion contracture of the knee due to chronic polyarthritis or infantile paralysis should be treated

ing. Of eighteen cases in which an examination was made for lateral deviations (genu valgum and genu varum) such deviations were discovered in nine. Growth disturbances were found to be caused solely by the tuberculous change in the epiphyseal cartilage, the method of treatment played no rôle in their development.

FLORENCE A. CARPENTER

Idhe II On Muscular Hernia of the Leg *Acta chirurg Scand* 1929 LXV 97

The author has collected twelve cases of muscular hernia of the anterior aspect of the leg. He distinguishes two types of such hernia, the traumatic and the constitutional or distention type. Constitutional hernia are generally found in persons with mesodermal weakness. Of the cases collected by the author four were of the traumatic type and eight of the constitutional type.

Distention hernia cause more complaints than traumatic hernia because of the nervous character of the persons in whom they occur, because of a progressive or intermittent increase in their size and because of secondary hernia or ruptures occurring in the aponeurosis.

Traumatic ruptures of fascia or muscle are rare and frequently heal without giving rise to hernia.

Distention gaps in the fascia of the leg are not uncommon. They bear a relation to muscular hernia comparable to that of wide inguinal canals to inguinal hernia.

The diagnosis of muscular hernia is easy but far from unimportant with regard to the possible sociomedical and medicolegal consequences involved.

Muscular hernia of the leg rarely requires operation. The author operated upon three cases of constitutional hernia which had been causing symptoms over a period of months. A good result was obtained. The indications for operation are more absolute in traumatic hernia and more relative in constitutional hernia.

As radical treatment the author recommends myoelectromy with suture of the muscle fascia and skin in stages. Simple suture of the fascia is seldom sufficiently strong to prevent recurrence.

Zerenko P. Necrotic Osteochondro Arthropathy of the Koehler Type (*Zur Klinik der Osteochondroarthropathia necroticans von Koehlerschen Typus*) *Arch f orthop Chir* 1929 XXV 11

The condition discussed by the author is localized in the head of the second or third metatarsal bone of one or both feet and is characterized by canes. It occurs most frequently in young persons and more commonly in females than males. Its course is slow. It causes pain and static and dynamic disturbances in the foot.

The author reviews 17 cases of his own and 130 collected from the literature. According to the changes in the bones he distinguishes three stages in the course of the condition: (1) the stage of extension or localized destruction; (2) the stage of full development with fragmentation and arthritis; and (3) the

stage of recovery, with stabilization of the remaining structures.

Histological examination shows necrosis under the joint cartilage, resorption in some areas and degenerative changes in the cartilage. The pathological anatomy and clinical manifestations are best indicated by the term 'osteochondro-arthropathy'. To this term the phrase of the Koehler type should be added to differentiate the condition from analogous processes in other parts of the body such as Legg Calvé Perthes and Osgood Schlatter disease.

At first conservative treatment should be used such as quartz lamp irradiation, heliotherapy, sand baths, the internal administration of arsenic, rest of the foot and the wearing of proper foot gear. If these measures are not successful within one or two months and the pain increases, operative treatment is indicated. The affected head of the bone should be resected and fatty tissue transplanted into the defect. The author has obtained good results with this procedure.

MAXIMILIAN HILSCH (2)

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS ETC

Lyte H H M. Multiple Resections for Chronic Osteo Arthritis. *Ann Surg* 1929 90 40

The author reports the case of a woman with multiple joints ankylosed in a position unfavorable for function. As the result of manipulations, arthroplasties on the elbows and metacarpophalangeal joints and arthrodesis of the wrists with fixation in the position of choice, much of the lost function of the upper extremities was regained.

ELLEN J. BICKELBERGER, M.D.

Girdlestone G R. Operative Treatment in Tuberculosis of the Larger Joints. *Brit M J* 1929 II 529

Girdlestone believes that glandular tuberculosis is the chief if not the only source of tubercle bacillæmia and that bone and joint lesions are secondary or metastatic. Bacillæmia arises from the lymphatic or glandular tuberculosis and toxæmia from bone and joint lesions.

The treatment is first conservative and then operative. General conservative and environmental therapy is maintained for a period long enough to cause the disappearance of the symptoms of bacillæmia for one year at the end of which time the lymphatic tuberculosis may be considered healed and operative measures may be attempted.

The purpose of operating is to remove a bone or joint focus that is causing a persistent harmful toxæmia, especially one that is unlikely to heal or at least not sufficiently sound to stand the mechanical strains to which it will be subjected.

Arthrodesis is indicated at the earliest moment for diagnosis. The operative procedures advocated for adults are limited to excision, arthrodesis and amputation. Exceptions are extra articular arthrodesis of the sacroiliac joints, extra articular but

processes the displacement is manifest and may amount to luxation.

The displacements are practically always anterior. With complete and prolonged immobilization in good position preceded if necessary by reduction the deformities become apparent, if they did not follow the fracture immediately or become exaggerated. This phenomenon is attributed by most surgeons to pressure exerted on the injured vertebra by the subjacent spinal segment but according to Vivas the fibrous organization of the prevertebral hæmatoma and the cicatrization of the common anterior ligament if it is torn are accompanied by a retraction capable of bending the spine at the level of the injured vertebra. When the ligament is not torn rarefaction may be so extensive as to amount to disappearance and the displacement takes place secondarily.

In time the fractures may be repaired by bony callus. When this type of consolidation has taken place with or without deformity, the cure may be considered final. The resulting immobilization is absolute and later compression of the cord or of a nerve root is not to be feared.

The early signs of these fractures may be slight and may be masked by the symptoms of graver injuries such as fracture of the femur, sustained at the same time. Cord symptoms occurring immediately after the injury even when they last only a few minutes should suggest spinal injury. When the lesion is in the cervical region stiffness is always present. When it is in the lumbar region there is nothing that points to it with any degree of definiteness except the roentgenogram. Roentgenography should always be resorted to after an accident that could possibly cause a spinal fracture. Patients injured in such an accident should be handled with the utmost gentleness before they are immobilized as a sudden movement may bring on paraplegia. In a few cases an operation to produce ankylosis has been performed.

The author discusses the relation of these fractures to Kuemmel's Verneuil disease and reports two cases.

FLORENCE A. CARPENTER

Willmoth P. and Lecoq J. Operative Treatment of Infrathalamic Fractures of the Calcaneum. Surgical Reduction and Bone Grafting (Le traitement opératoire des fractures sous thalamiques du calcaneum: réduction sanglante et greffes osseuses). *J. de chir.* 1929 xxxiii 781.

The authors state that when the site of an infrathalamic fracture of the calcaneum has been exposed for the length of the external surface of the calcaneum and the thalamus has been brought back to an infraastragal position approaching the normal the infrathalamic breach is still considerable. It traverses the bone from side to side. The loosened thalamus may be easily pushed down and its new position is very unstable. As the calcaneum is spongy and hence friable and as it is meagerly supplied with fat it will not well support a metallic prosthesis. Osteopenosteal grafts sustain the thalamus and favor the formation of callus.

Complete denudation of the external surface of the calcaneum exposes the line of infrathalamic fracture and the lines which radiate toward the anterior and plantar surfaces of the bone. The astragalocalcaneal articulations gape widely for some distance. The calcaneocuboid articulation is not always open but is always dislocated. The thalamic mass must be disengaged and moved up so that its superior convex articular surface is in contact with the inferior concave articular surface of the astragalus. When the thalamus has been replaced an opening more than 1 cm. in height is discovered. This cavity must be filled with osteopenosteal grafts taken from the external surface of the peroneal malleolus and from the peroneal diaphysis.

When the anterior apophysis of the calcaneum is completely detached the surgeon may proceed to calcaneocuboid arthrodesis. To keep this apophysis in place grafts may be slipped into the tarsal sinus. The authors have used this technique in four cases.

PAGE

The term infrathalamic is a translation of a French term. The region in question is that portion of the calcaneus just below the astragalus. The term may be translated as below the socket of the calcaneus. It corresponds to the subastragaloid space of Hoke.

first by conversion of the tensor fasciae latae muscle into an extensor. The increase in strength thus obtained is usually sufficient to reduce even serious flexion contractures. A persisting contracture of from 10 to 15 degrees can be corrected by a capsulotomy by Putti's method.

Port K. Operative Arthrodesis of the Talocalcaneal Joint in Club Foot (*Zur operativen Arthrodesis des Talocalcanealgelenkes bei Klumpfüß*) *Deutsche Zeitschr. f. Chir.*, 1929, ccxv, 208.

As non operative treatment of club foot after the fifteenth year of life does not offer a favorable outlook and as osteoclasia leads to considerable bone injury, the author has adopted a new procedure which he has employed in three cases with very good results.

His method consists in the removal of one wedge of bone from Chopart's joint and to correct the varus position of the heel of another from the talocalcaneal joint. The skin incision is made over the external malleolus to the tip of the bone, then anteriorly to the base of the fifth metatarsal and then over the dorsum of the foot. The soft tissues are separated and Chopart's joint and the talocalcaneal joint are opened. Both joints must be wide open so that the foot may be flexed. A small incision is made in the plantar fascia and the wedges are then chiselled from the joint surfaces. If the first and second metatarsals are still displaced downward an osteotomy is done upon them.

After the operation a plaster-of-Paris cast is worn for three months. An important advantage of this method is that the ankle joint is not opened.

BAUMING (Z)

FRACTURES AND DISLOCATIONS

Taylor A. S. Fracture Dislocation of the Cervical Spine *Ann. Surg.* 1929, xc, 321.

Fracture dislocations of the cervical spine due to direct violence usually cause sufficient damage to the cord to result in immediate death. Hence the author discusses only those caused by indirect violence such as hyperflexion.

In the latter type there is injury to the spine cord meninges and nerve roots. The dislocation is associated with comminuted fractures of the articular processes, rupture of the articular ligaments and the intervertebral disk and fracture of the anterior edges or gross fracture of the vertebral bodies. If reduction is not accomplished bony union results at the anterior border of the bodies and between the articular processes behind.

The cord may be merely contused or completely severed. Hemorrhage varies in amount but is usually punctate. The edema is proportional to the severity of the injury. When there is deformity of the bones a transverse pressure myelitis may develop later.

The treatment should be directed toward the restoration and protection of nerve function by early

reduction. The reduction should be accomplished without anesthesia. In the method used by the author, controlled traction is applied on the head and countertraction on the legs until the muscle spasm relaxes sufficiently to permit reduction by manual manipulation. The traction on the head is obtained by means of a halter which is attached to a rope passed around the pelvis of the operator so that the operator may support the patient's head and neck with his hands while the traction is being applied.

After reduction has been obtained immobilization is continued for three or four weeks. At the end of that time a spine brace with a jury mast is used and ambulatory treatment is begun.

Open operation is dangerous because it necessitates additional handling of the patient and because removal of the arches weakens the stabilizing apparatus at the injured area. It is necessary, however, when there is evidence of subarachnoid block and when transverse myelitis develops.

FINTY J. BERKELEY, M.D.

Huet P. Unrecognized Fractures of the Vertebral Bodies (*Les fractures méconnues des corps vertébraux*) *J. de chir.* 1929, xxvii, 13.

Incomplete fractures of the spine without injury to the cord which are clinically latent are far from rare.

J and A Broeckel collected eighty cases and saw fifteen cases themselves. Léon reported eight cases in three of which the fracture was in the cervical portion of the spine and in five of which it was in the lumbar portion. Baumgartner saw four cases in four years. Moore believes that there has been an increase in such injuries as the result of automobile accidents.

The causative trauma may be so slight that in the case of a fall the patient gets up and walks away without assistance. A jolt that causes the head to strike against the top of an automobile or that causes a person to be thrown in a sitting posture from the seat to the floor is sufficient. The discovery of the lesion may require very good anterior and lateral roentgenograms.

Such fractures are most frequent in the cervical and lumbar regions. Multiple fractures do not always involve adjoining vertebrae. All types of fracture are represented. A compression fracture is usually asymmetrical when it is not it may be difficult to recognize in the roentgenogram. In the majority of fractures there is more or less marked displacement of the fragments. The displacement may be contemporaneous with the fracture or secondary and associated with the sudden development of paraplegia or quadriplegia in a patient who showed no signs of paralysis at first. In an untreated case it may be late and progressive. In cases of simple refraction the result may be limited to slight angulation of the spine, kyphosis or scoliosis or kyphoscoliosis. In the graver cases with associated tearing of the ligaments and fracture of the articular

Normal intravascular tension may cause arteriosclerosis. Hypertension causes earlier and more intensive changes. In the greater circulation de-
 crescent arteriosclerosis begins as early as the third decade, but in the pulmonary circulation it does not occur until the seventh or eighth decades because normally the pulmonary arterial pressure is one sixth the pressure in the aorta. Age is a factor only in allowing sufficient time for the normal or increased pressure to act. Since mitral stenosis is the most common cause of increased pressure in the lesser circulation occurs more frequently in the relatively young. Arteriosclerosis of the pulmonary circulation occurs at a much lower average age than arteriosclerosis of the greater circulation. Sex is a factor only as it affects pressure relations. The condition is more frequent and develops at an earlier average age in men than in women because the normal pressure is higher in males.

The relation of arteriosclerosis to intravascular tension is indicated also by (1) the direct relation of retinitis to hypertensive disease (2) the fact that arteriosclerosis is most prominent at sites where the strain is greatest such as proximal to a congenital or artificial vascular stenosis (3) the occurrence of sclerosis in the endocardium of heart valves and chambers which have been subjected to prolonged strain and (4) the fact that arteriosclerosis of the greater circulation is usually less in phthisical patients whose blood pressure is low.

Sclerosis of the veins is independent of general sclerosis. It is localized to areas of increased intravenous pressure such as are found in cirrhosis of the liver, persistent umbilical vein and arteriovenous aneurism. The presence of phlebosclerosis of the mesenteric vessels in Banti's syndrome suggests that hypertension of the portal system may be a factor in the causation of the lesions of that condition.

The arteriosclerosis as thus far produced experimentally is not identical with arteriosclerosis in man. Infections including syphilis, probably do not cause arteriosclerosis but produce an arteritis. Because of the independent development of arteriosclerosis in the greater and lesser circulation it is improbable also that toxins metabolic products and food poisons are able to cause arteriosclerosis. Points of fixation and diminished expansile motility of vascular trunks play a rôle in the localization of arterio-sclerotic patches.

The conclusion to be drawn is that hypertension is not caused by arteriosclerosis but on the contrary hypertension in either the greater or lesser circulation is always followed by arteriosclerosis of the vessels.

E. S. PLATT M.D.

Loehr W. The So Called Traumatic Thromboses of the Axillary and Subclavian Veins (Ueber die sogenannte traumatische Thrombose der Vena axillaris und subclavia). *Deutsche Zeitschr f Chir* 1929 CCXIV 263.

The author states that so-called traumatic thrombosis of the axillary and subclavian veins is

very rare. It is more frequent on the right than the left side and as a rule occurs in persons of middle age who are in good health. Its onset is characterized by slight pain, mild fatigability and weakness, swelling and cyanosis of the arm. This phase is followed by a reparatory phase with venous dilatation. Only after some time is adequate venous drainage restored. For a long time fatigue, pain, and weakness on effort persist.

The previously assumed thrombosis resulting from traumatic tearing of the intima has not been demonstrated as the cause of the condition. Nor is the cause a disease of the blood, an infectious condition, burn or other affection such as frequently leads to thrombosis. In Loehr's opinion the most important factor is persistent over exertion with resultant over dilatation of the arm veins. Because of the unyielding sheathing of the subclavian veins by fascial fibers and the lack of large collateral veins between the arm and the superior vena cava congestion readily results from sustained intense muscular activity. Mechanical obstruction from adjacent glands, callus, goiters, etc. may contribute to the development of the condition. In pronounced cases there is often a polycythemia. In two of six cases seen by Loehr polycythemia was definitely present and in one the red cell count approached that of polycythemia.

Cases of true thrombosis of the axillary and subclavian veins should be differentiated from those with obstruction and overdistention of the venous channels. The former condition is extremely rare and may result from the latter. The clinical differentiation of the two conditions is very difficult. Thromboses which arise from another injured or infected focus in the arm veins and extend centrally must be ruled out.

The conditions of stasis which are favored by mechanical obstruction can be completely relieved by operative treatment (removal of glands, etc.). For cases in which no mechanical obstruction is demonstrated only conservative measures (rest) may be considered.

L. KOENIG (2)

Lindquist E. On the Causes of Varicose and Thrombo Embolism. *Acta obst et gynec Scand* 1929 VII 229.

Lindquist believes that the chief cause of varices is the retrograde blood current occurring in the saphenous vein which was described by Magnus. The abnormal circulation he attributes to the upright position in which the force required to transport the blood to the heart situated relatively far above is not great enough to prevent certain other forces of a simple hydrostatic nature from asserting themselves when in more advanced years, the blood propelling forces are diminished. In the saphenous vein the blood must be lifted up to the heart from the most dependent parts, the capillary network of the foot and leg, whereas the fountainhead of the femoral vein (capillary network of the thigh and calf) is situated nearer the heart.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Ipsen J. Methods Which Permit a Study of the Function of Peripheral Arteries (Des methodes qui permettent d'étudier les fonctions des artères périphériques) *Acta chirurg Scand* 1929 lxx 226

Leriche's work on sympathectomy led to investigations of the biology of the peripheral arteries in which use was made of measurements of the surface temperature as well as oscillometry.

The surface temperature indicates (Ebbecke, Lewis and others) the amount of blood that flows through the skin. This depends upon the degree of dilatation of the arterioles. The temperatures are taken with mercury thermometers under a layer of felt. Normally the temperature is about the same everywhere on the arms and the upper parts of the legs but shows marked variations in the feet. The difference between the two sides is always less than 1 degree except in the feet where it is a little greater. The color of the skin shows the amount of blood present at a given moment in the capillaries and venules of the skin. The circulation of blood through the skin and the degree of dilatation of the capillaries do not necessarily correspond as the dilatation and contraction of the arteries and capillaries take place independently of one another (Krogh).

Oscillometry with Pachon's instrument gives an idea of the degree of dilatation of the large arteries especially when comparative studies are made.

After a brief review of what is known of the innervation of arteries (anatomy and physiology) the author gives an account of the action of different stimuli. Trauma causes contraction followed by dilatation and work causes immediate dilatation. Stimulation of the sympathetic ganglia has a marked effect on the corresponding arteries. While the action of slight heat has no particular effect on the arteries, even fairly mild local cooling of the skin by the application of water at a temperature of 15 degrees for ten minutes causes prolonged local contraction and more pronounced cooling of a hand causes contraction of the main arteries of the arm. Local cooling may therefore be employed to determine whether the superficial arteries are paralyzed. When paralysis is present the surface temperature will rise to its level before the cooling in a few minutes whereas when the arteries are normal this will take one and a half hours or longer.

Lastly mention is made of the marked effect on the arteries of inflammation. When for example the superficial temperature over a tuberculous knee is 2 or 3 degrees higher than that over the sound knee the difference is due to reflex dilatation of the arteries and not to conduction from deeper lying tissues. At the base of the extremities and on the

trunk no such rise of temperature takes place probably because reflexes are elicited only within the area of the artery concerned.

Lower, Sir D. A. Hunter's Operation for the Cure of Aneurism. *Brit J Surg* 1929 xlii 193

Power reviews Hunter's contributions to science and his first operation for the cure of popliteal aneurism. Hunter performed his operation for aneurism five times. His results proved the correctness of his theory that slowing of the blood stream will cure aneurism; that aneurism is caused by disease of the arteries and is not simply the result of long continued local injury and that gangrene will not result from ligation so long as there is sufficient collateral circulation. J. FRANK DOLGERT, M.D.

Moscowitz E. The Cause of Arteriosclerosis. *Am J Med Sc* 1929, clxxviii 344

In attempts to determine the cause of arteriosclerosis it is not sufficient to study the large arteries of the greater circulation alone as the pulmonary system capillaries veins and heart may also be affected. Investigation of the lesion in each of these components gives convincing proof that the main and perhaps the only cause of arteriosclerosis is intravascular pressure.

When there is involvement of the general circulation the pulmonary circulation is usually not affected. The reverse also is true. Investigation of the pulmonary vessels shows that arteriosclerosis is a frequent condition being found in 65 per cent of all autopsies and that the factor common to all causes is increased tension. The causes include mitral stenosis, emphysema, pulmonary fibrosis, obliteration of the pleural spaces, kyphoscoliosis, open ductus Botalli and communications between the right and left heart. The alveolar wall has a beaded appearance due to the enlargement of the capillaries. The enlargement of the capillaries results in contraction of the alveolar spaces which is one of the reasons for the decrease in alveolar capacity noted in cardiac disease. The pulmonary lesions are termed arteriocapillary fibrosis and are almost identical with those of glomerular nephritis in hypertension of the greater circulation. The pulmonary capillary sclerosis represents the lesion of "Stauungsinduration" or the pneumonia of heart disease. It is not present in uncomplicated aortic insufficiency, in which increased pulmonary intravascular pressure is dynamically impossible. Watjen has reported a case of pulmonary arteriosclerosis in an infant six months old which was due to a patent interventricular septum. This case proves that increased tension may cause arteriosclerosis in six months.

Good results are obtained from operation in about 50 per cent of cases. In 25 per cent operation is entirely successful, allowing the patient to leave the hospital with a normal extremity. The most successful operations are those on the brachial artery, and the least successful those on the aorta. Key has reported a successful embolectomy on the aorta by retrograde approach through the femorals.

The operation should be performed under local regional or spinal anesthesia. Liberal exposure and gentle handling are important. The vessels are controlled by rubber tubing above the embolus and below it on each of the branches. Sufficient tension must be applied distally to prevent the embolus from traveling peripherally. Frequent washing with 2 per cent sodium citrate is advocated. The embolus should be milked out from below through a longitudinal incision made at its upper end which allows free bleeding from below. The distal arteries are controlled by the rubber tubing and the upper portion of the embolus or secondary thrombus is forced out by the blood stream. Careful closure with silk completes the procedure.

Six embolectomies in 7 attempts are reported. Three of the 7 patients died in the hospital, 3 had temporary restoration and 1 had permanent restoration. Three of the 4 who survived required amputation. Early diagnosis and operation are necessary for successful results. E. S. PLATT, M.D.

Brooks, B. Surgical Applications of Therapeutic Venous Obstruction. *J. Missouri State M. Ass.* 1929, LVII, 428.

The author discusses particularly the use of venous occlusion in arterial disease. He states that in experiments on animals the incidence of gangrene following arterial obstruction was decidedly lower when

both the artery and vein were obstructed than when the artery alone was obstructed. He gives the indications for ligation of the vein as follows:

1 Cases of arteriovenous fistula in which the artery has been ligated and closure of the fistulous opening is impossible and those in which closure of the fistulous opening necessitates obliteration of the artery.

2 Cases of progressive arterial degeneration with obstruction.

3 Cases of sudden arterial occlusion.

4 Cases of injury or operation which require ligation of a large artery. M. HERBERT BAKER, M.D.

BLOOD, TRANSFUSION

Warren, S. L. Acute Leukæmia. A Review of the Literature and of Twenty Eight New Cases. *Am. J. M. Sc.* 1929, CLXXVIII, 495.

Warren reviews 113 cases of acute leukæmia and reports a case in which infiltration by leukæmic cells was found in every organ examined. In size and shape the cells resembled the small lymphocytes but possessed a more abundant cytoplasm and were thought to be myelogenous cells of a primitive type. Warren comments on the constancy of the history, clinical picture and blood and tissue findings regardless of whether the condition is considered to be of myelogenous or lymphogenous origin. He states that acute myelogenous leukæmia is frequently diagnosed incorrectly as of the lymphogenous type because the primitive bone marrow cells are mistaken for lymphocytes. Differentiation is aided by supravital stains.

Most of the patients whose cases are reviewed were young adult males. Eighty-four per cent died within eight weeks. M. HERBERT BAKER, M.D.

In a similar way the author explains the production of varices in the hemorrhoidal veins and the pampiniform plexus.

On the basis of this theory and the findings of investigations made by Aschoff, Starlinger, and Sametnik Lindquist concludes that the varicose syndrome is one of the main causes of spontaneous venous thrombosis. In support of this view he refers to a statistical compilation of the cases of thrombosis and thrombophlebitis treated in the obstetrical and gynecological department of the Malmö General Hospital during the period from 1904 to 1927. In these statistics cases of thrombosis pulmonary embolism and thrombophlebitis have been carefully differentiated. The data show that the incidence of thrombosis and embolism has considerably increased in recent years. The author has found also that cases of thrombophlebitis have increased in about the same ratio as those of thrombosis. In explanation of the increased frequency of thrombosis he expresses the opinion that the conditions under which the now full grown generation is living have produced factors favoring the development of the varicose syndrome.

In conclusion various measures suggested for the prevention of thrombosis after labor and operations are reviewed. Lindquist advises the wearing of an elastic stocking for some time after operation.

Allen E V. Thrombo Angiitis Obliterans. Methods of Diagnosis of Chronic Occlusive Arterial Lesions Distal to the Wrist with Illustrative Cases. *Am J Med Sc* 1929 clixviii 337

Accurate diagnosis is possible in cases of suspected vascular disease and the mistake of diagnosing thrombo angitis obliterans as Raynaud's disease or erythromelalgia is avoidable. The diagnosis may be made from the history, examination by inspection and palpation, and simple tests.

Thrombo angitis obliterans is an inflammatory disease of the vessels of the extremities resulting in occlusion. Any of the vessels may be affected not only the palpable arteries as is sometimes assumed.

Occlusion of the ulnar or radial artery distal to the wrist cannot be localized by the usual means since color changes with posture, a decrease in the pulsation of the artery at the wrist, and a decrease in the cutaneous temperature at the wrist may be absent because of free circulation through the uninvolved arteries. In the presence of obstruction the compression test—clenching of the hands and pressure on the radial or ulnar artery—results in prolonged pallor.

Involvement of the digital arteries may be determined by stroking or exerting pressure to induce pallor. When obstruction is present the pallor persists for some time. Abnormal postural color changes in all digits suggest involvement proximal to the digital arteries while excessive pallor of one or more digits usually means involvement of the digits showing the color changes.

The complete examination of patients with suspected arterial disease must include an investigation

of the effect of posture and of the skin temperature. Palpation alone is not sufficient to determine the patency or occlusion of the arteries; it must be supplemented by the compression test.

The author reports cases demonstrating the irregular distribution of the occlusion.

E. S. PLATT M.D.

Allen A W. The Surgical Treatment of Embolism of the Extremities. *England J Med* 1919 cii 304

The first successful removal of an embolus from a large artery was performed by Labay in 1911 in a case of embolus at the bifurcation of the common femoral artery. Previous attempts had been made as early as 1865. Carrel's development of a successful technique for arterial suture made the procedure possible and the operation was popularized by the success of Kev.

In over 6,000 autopsies Bull found 15 peripheral emboli. Two were in the aorta, 6 in the common iliac artery, 5 in the femoral artery, 1 in the popliteal artery, and 1 in the subclavian and axillary arteries. He found also 181 thrombi in the heart. In 37 cases of embolism reviewed by Danz, the condition was due to an operation in 6, to parturition in 3, and to cardiovascular disease in 22.

The diagnosis is often obvious. As a rule there is a history of sudden excruciating pain in an extremity coming on in a patient already ill, usually with cardiac disease. Large doses of morphine are required. The pulse rate and respiration are increased. Palpable decrease in the pulse pressure, sweating, and shock are apparent. The limb is cold and pale and there is absence of pulsation. In the case of the arm there is inability to move the fingers. Later the limb becomes mottled. In arm involvement there is a fixed drawn appearance of the fingers with contraction rather than swelling of the tissues. The differentiation from thrombosis is difficult but thrombosis develops more slowly. Phlebitis is differentiated by the presence of swelling, a bluish color and the presence of heat and pulsation in the vessels. Muscle spasm from temporary anemia is transient.

In the localization of emboli it must be remembered that the common site is at the bifurcation of vessels. If the case is seen before there is extensive secondary thrombosis the embolus can usually be located. If it is in the popliteal artery the femoral artery can be felt pulsating in Hunter's canal. The decrease in the temperature stops at the ankle and ankle motion is usually possible. If the embolus is at the bifurcation of the common femoral artery the skin temperature is lowered to a short distance above the knee. Pulsation can be felt just below Poupert's ligament and motion of the ankle and toes is abolished. If the embolus is at the bifurcation of the common iliac artery the whole thigh is cold, there is no pulsation and knee motion may be abolished. In some cases the embolus may be palpable especially when it is situated at the bifurcation of the brachial and femoral arteries.

especially dangerous because of its depressive effect on the heart. During the operation it may lead to arrest of breathing, and after the operation it may cause metabolic changes such as poisoning.

GEORGE R. McAUILLIFF, M.D.

Trout H. H. Blood Changes under Ethylene Anæsthesia. *Anest. & Anal.*, 1929, vol. 269.

The author believes that ethylene-oxygen causes less change in the percentage of blood sugar than any other general anæsthetic and he has found that it produces no appreciable change in the coagulation or bleeding time. It results in fewer blood changes than any other known anæsthetic probably because it produces less disturbance of the oxygen content of the blood. In spite of its advantages, however, Trout is of the opinion that it will not soon supplant ether for general abdominal surgery.

GEORGE R. McAUILLIFF, M.D.

Pitkin G. P. Spinocain The Controllable Spinal Anæsthetic. *Brit. M. J.*, 1929, ii, 183.

Spinocain is a combination of novocain, amyloprolamin, strychnine, and ephedrine. The purpose of the amyloprolamin, a viscid jelly like substance made of gliadin, is to prevent diffusion of the novocain and that of the strychnine and ephedrine to prevent vasomotor collapse. A light spinocain has a specific gravity of 1.0005 and contains 2 mgm. of strychnine, 200 mgm. of novocain, 130 mgm. of amyloprolamin, 300 mgm. of ethyl hydrate, and normal saline solution sufficient to make 2 c. cm. In the heavy solu-

tion, which has a specific gravity of 1.109, the ethyl hydrate is replaced by 100 mgm. of propantriol in enough normal saline solution to make 0.5 c. cm.

The heavy solution should always be given with the patient in the sitting or marked Fowler position. Pitkin uses sharp 22 gauge short beveled needles. He says that the size of the subarachnoid space varies in different persons, but the extent of expansion of spinocain necessary to produce anæsthesia on the body surface at different levels is quickly learned. Children tolerate spinocain anæsthesia very well. The article contains a table for use in determining the dosage necessary for the induction of anæsthesia in children between one month and fifteen years of age.

M. HERBERT BARKER, M.D.

Gwathmey J. T. Oil Ether Colonic Anæsthesia. Clinical Experience with More Than 5000 Cases. *J. Clin. M.*, 1929, 39, 9, vol. 447.

Colonic oil ether anæsthesia is considered by the author safer than routine inhalation anæsthesia. It is always under control and has a safety margin wider than that of ether, ethylene, or nitrous oxide. In its induction there is no possibility of infection of entering a vein or of injuring an important nerve such as is associated with local spinal, sacral, paravertebral and regional anæsthesia. Recovery is usually painless and devoid of the unpleasant after effects of ether. A 65 to 75 per cent solution of ether in oil is used. This is non-irritating. The only contra-indication to the method is a pathological condition of the bowel.

GEORGE R. McAUILLIFF, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Hertzler A E The Newer Conception of Wound
Healing as Applied in Practical Surgery *Am J*
Surg 1929 vii 293

Hertzler states that primary wound healing is brought about by the agglutination of the wound surfaces produced by fibrin fibrils which remain to form, through chemical changes adult fibrous tissue. When some condition exists which prevents the formation of fibrillary fibrin a granular fibrin is deposited. It becomes necessary then for the coagulum to be resorbed and replaced by the product of fibroblasts. The latter type of healing is spoken of as "secondary wound healing."

Those conditions which provide ideally for the formation of fibrillary fibrin in the coagulation of blood make for primary wound healing and conversely those conditions which inhibit the formation of fibrillary fibrin make for secondary wound healing. Infections cause secondary wound healing but other conditions are also responsible. Fat prevents the formation of fibrillary fibrin hence the interposition of fatty tissue between two surfaces will prevent primary healing. Necrotic fat infiltrates and invades the suture line even when the tissues have been correctly coapted. Necrosis of fat is produced by trauma such as the rough handling of retractors the needless crushing of fatty tissue and interference with the blood supply to the fat. These factors also prevent primary union. Digestive ferments and to a lesser degree, urine act in a similar manner.

Thrombi and emboli are due to the formation of aseptic masses of granular fibrin. Edema of the tissues in which the vessel lies permeates the vessel walls and changes the subendothelial substance which forms the fibrin. The formation of fibrillary fibrin is prevented hence clots lacking this substance and forming within the vessels do not organize. Any manipulation will detach these small masses. Therefore it is not wise to ligate vessels in edematous tissue undergoing a reaction. Ligation should be done proximal to this area.

Adhesions due to infection are temporary and are released as soon as the infective process has subsided. Permanent adhesions occur in a region adjacent to an infective process in which the irritation is just sufficient to produce an exudate capable of forming fibrillary fibrin. Muscle fascia healing is brought about by a fibrous myositis arising when the conjoined tendon is sewed to the inguinal ligament. The kind of suture employed is of little importance.

The type of material used in wound drainage depends on whether the drainage is established to con-

duct to the surface fluids that have accumulated in natural or artificial cavities or to furnish a means of escape for fluids which may accumulate and produce increased tension. In the first instance it is desirable to keep the wound open until the diseased condition heals. This can be done with rubber tissue which prevents the formation of fibrillary fibrin. In the second instance it is desirable to prevent the accumulation of fluid and favor wound healing by favoring the formation of fibrillary fibrin. This can be done with gauze which acts as a foreign body and promotes coagulation.

Where vessels have been ligated and the wound is left open, gauze will favor the occlusion of the vessels by the coagulation of fibrin. Secondary hemorrhage is thus prevented.

In skin grafting the graft will heal better when it is applied to a granulating surface which has not been bathed with a solution which might remove the layer of fresh fibrin on its raw surface.

MANUEL E. LICHTENSTEIN, M.D.

ANÆSTHESIA

Fairlie H P Napier F L and Primrose W B
Discussion on Anæsthesia in Relation to
Operation Risk *Glasgow M J* 1919 xvi 63

FAIRLIE believes that anæsthetic risk is decreased by the use of nitrous oxide and ethylene. Nitrous oxide induces anæsthesia rapidly and is safe even in cases of diabetes and toxic goiter. It is non-irritating to the respiratory tract and has relatively little effect on the metabolism. Its disadvantages are that it requires the use of a cumbersome apparatus it does not produce complete relaxation and it raises the blood pressure. Ethylene resembles nitrous oxide but is very inflammable and has an objectionable odor.

NAPIER is of the opinion as regards both strength and toxicity ether occupies a position midway between nitrous oxide and chloroform. He employs atropin prior to the induction of anæsthesia to lessen mucus secretion but he disapproves of the use of morphine because of its sedative effect on the respiratory center. He employs ether by the closed method for short anæsthesias and by the vapor method for longer anæsthesias. As a rule it is comparatively free from after-effects. It is contraindicated in bronchitis, nephritis, diabetes, acute sepsis, toxæmia, cachexia, shock and hemorrhage.

PRIMROSE states that while chloroform has excellent anæsthetic properties it is so toxic that it serves best as an adjuvant to ether given by the open method. He discusses the risks associated with its use. During the induction of the anæsthesia it is

irradiation is prejudicial to the health of subsequent offspring

ADOLPH HARTUNG M.D.

RADIUM

Carling E. R. and Leslie Spinks A. J. Radium Teletherapy. Clinical Experience with a Temporary Bomb. *Brit. M. J.*, 1929, ii, 180

CARLING states that radium teletherapy lends itself to the treatment of primary growths difficult of access, visceral metastases, and infiltrating extension. The cases in which he has used it were principally those of growths not amenable to other forms of radium application, those requiring treatment additional to the interstitial, cavity, or contact application of radium, those of growths of such dimensions that homogeneous irradiation by other methods was impossible, and those requiring prophylactic irradiation after operation. In the great majority, the condition was classed as hopeless.

The dosage was entirely empirical though based on Forsell's dictum that a certain minimal absorption of irradiation in a given time is necessary to secure healing of a given type of tumor. It is difficult to measure the amount of irradiation absorbed. There is a certain maximum of irradiation which cannot be exceeded without causing injury to the organism as a whole. The dosage should be concentrated into as short a period of time as possible. The skin will stand the application of 1 gm. of radium at a distance of 10 cm. for fifty hours. With four portals of entry, 200 mgm. may be given without danger.

In the cases of neoplasms of the tongue and mouth the response was poor but other methods also failed. The most satisfactory results were obtained in neoplasms of the larynx and pharynx. The

oesophagus is beyond satisfactory range. The treatment failed in cases of neoplasms of the uterus and ovaries but in these there was extensive abdominal invasion. In cases of renal neoplasms only palliation was obtained. Breast recurrences were kept in check even when they were extensive. Vulvar glandular extensions were not as sensitive as the primary growths. Osteogenetic sarcomata showed only a temporary recession.

The effects of the irradiation are purely local. One group of metastases may be vanishing under the treatment while another group beyond the field of irradiation is steadily progressing. The best results are obtained in cases of growths which on account of their situation receive irradiation of high intensity, that is, growths in the pyriform fossa, the postcricoid region, and the abdominal and cervical glands. As more than 1 gm. of radium is needed for the administration of adequate doses in a sufficiently short time, it seems advisable to restrict the use of the present gram apparatus to the treatment of carcinomata at a depth not greater than 6 cm.

LESLIE SPINKS discusses the mechanics and use of the temporary bomb. He states that before the patient is treated a drawing is made to scale of the lesion and its situation in the body, and an intensity chart is applied to the drawing. While a distance of 10 cm. was decided upon, the actual intensity delivered was in many cases diminished for purely mechanical and anatomical reasons. The 'bomb' is in use twenty-four hours daily, six days a week. Out-patients are treated by day and in-patients by night. The average duration of treatment is two hours. Periodical examinations of the blood and liver function and other biological tests are made to determine the effects of the irradiation on the organism as a whole.

A. JAMES LARKIN M.D.

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Ewing J Radiosensitivity *Radiology* 19 9 313

Ewing discusses the relation of radiosensitivity to cellular metabolism the embryonal character of the cells the general physiology of the cells of origin and the patient's general condition

He states that rapid growth of a tumor nearly always signifies radiosensitivity A rapid rate of growth is accompanied by an increased or unstable blood supply a large number of mitotic nuclei and an abundance of autolytic cell ferments These factors combine to render rapidly growing tumors sensitive to radiation In fact caution must be used in their treatment in order to prevent interstitial hemorrhage and massive necrosis

The radiosensitivity of embryonal cells probably depends on the lability of the embryonal cell cytoplasm its delicate vascular supply and absence of a disposition to produce fibrous tissue

With regard to the general physiology of the cells of origin Ewing discusses the desmoplastic properties or the tendency to produce connective tissue The less marked this tendency the more radiosensitive the tumor The more highly vascular the tumor the more radiosensitive it is

The location or bed of the tumor also influences the results of radiation Tumors growing in bone are resistant In fat tissues tumor cells find abundant nourishment but are protected from a ready attack by leucocytes and granulation tissue Tumor cells invading old inflammatory areas are very resistant

The patient's general condition determines the results of radiation regardless of all other factors In the cases of patients in good health without anemia or cachexia the results of radiation are always prompt and definite whereas in the presence of anemia or cachexia radiation may fail completely

In general the degree of radiosensitivity runs parallel with the degree of cellular differentiation of the tumor cells but there are many exceptions notably the melanomata and the giant cell tumors of bone As the result of studies on degrees of malignancy and radiosensitivity tumor diagnosis has become more difficult and at the same time more serviceable The difference in malignancy and radiosensitivity is an important guide for the radiotherapist

CHARLES H HEWOCK M D

Murphy D P and Goldstein L The Etiology of the Ill Health of Children Born After Maternal Pelvic Irradiation *Am J Roentgenol* 1929 100

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This study represents part of an investigation dealing with therapeutic pelvic irradiation of women

and its effect upon the health and development of subsequent offspring Two previously reported studies showed that such irradiation may be followed by the birth of unhealthy or defective children and that it may have been the cause of the ill health or defects in the children In the investigation here reported all of the etiological factors that may have been responsible for the production of the ill health or abnormal condition of the children were weighed in order to ascertain the extent to which these factors influenced the health of the subjects and if possible the special rôle played by the irradiation in the production of the various disturbances In this article the group of unhealthy children born after preconception irradiation is discussed

The findings of the investigation are summarized as follows

1 Twenty four per cent of 650 pregnancies following preconception or postconception radium or roentgen irradiation of the pelvis ended in abortion and 13 per cent terminated in the birth of unhealthy children

2 One out of every 10 or 11 children born after preconception irradiation of the pelvis was unhealthy whereas 1 out of every 2 children born after postconception irradiation was unhealthy

3 The ill health of 24 of the 46 unhealthy children born after preconception irradiation was attributed to such influence as (a) ill health of the mother prior to irradiation or during pregnancy 6 cases (b) complications incident to delivery or prematurity 13 cases (c) accidental causes 3 cases

4 The cause of the ill health of 22 children could not be determined Only 7 of these children were seriously defective

5 Only 1 child out of every 59 children born after preconception irradiation exhibited a gross anatomical defect of unknown origin In this small number the disturbance may have been caused by the previous ovarian irradiation but it is probable that if the irradiation had been the etiological factor the defects would have occurred with greater frequency regularity and uniformity

In conclusion the authors state that it is conceivable that therapeutic preconception irradiation of the pelvis by its deleterious influence upon the germ plasma of the unfertilized ovum may be the cause of defects in subsequent children since a few disturbances of unexplainable origin occurred in the children under investigation Experimental study may eventually throw more light upon this at present theoretical possibility The authors believe that the continued use of the roentgen rays or of radium in the treatment of pelvic diseases in the non-pregnant woman of child bearing age is justifiable until it has been shown beyond doubt that such

Following a historical review of 'trophic' disturbances the author states that new interest in these conditions was aroused by the experiences of the war. There is general agreement that the primary influences determining the injuries are to be ascribed to the trauma and that the ultimate disturbances have their origin in the central stump of the injured nerve.

In all of twenty dogs in which chronic irritation of the central neuroma of the sciatic nerve was produced by cicatricial adhesions, tearing or sewing to skin and muscle typical non healing ulcers developed within from one and one half to two months after the operation.

Forty five clinical cases treated by neurotomy are reviewed. Of the twenty six in the first group, complete healing resulted in from two months to two years in twenty five. In one case there was a tendency toward recurrence. The cause of the condition in the twenty five cases was local trauma in twelve, trauma to the nerve stem "at a distance" in five cases and burns, varicose veins, lues, and osteomyelitis in one case each. The cause in three cases is unknown. These subgroups are discussed individually. In some instances as many as four neurotomies of different nerves were necessary.

In the second group there were seven cases with perfect results at first but with rapid recurrence. Nearly all of the patients in this group were old and half of them had symmetrical gangrene.

The third group comprised thirteen cases in which there was no healing after neurotomy. Most of the patients in this group also were old but no special cause for the condition could be determined.

It appears that the best results are obtained before the thirtieth year of age. The case reports are supplemented by numerous illustrations showing the condition before and after treatment.

The study of the process of healing demonstrated that neurotomy is followed by a copious secretion of pus the amount of which may be measured directly. The bacterial flora changes. Before operation microscopic examination shows gram negative bacilli and sometimes gram positive diplococci and cultures yield bacillus pyocyanus and sometimes gram positive diplococci and staphylococci. After operation microscopic examination more frequently shows gram positive diplococci and less frequently gram negative bacilli and pure cultures of gram positive diplococci are obtained. The hydrogen ion concentration of the wound secretion varies from 6.9 to 7.1 before operation to from 7.1 to 8.1 after operation. The gram positive enterococci growing best on alkaline media are placed by Kaschkin in the group of enterococci.

The ulcer varies also in its appearance after neurotomy. In the course of three or four days fresh granulations sprout up and cover the raw surfaces. Necrotic tissue masses are thrown off and the hyperkeratotic areas become loosened. Epithelialization sets in rapidly and makes good progress. The edema so frequently present quickly vanishes.

Against these improvements, however, are the disadvantages of sudden recurrence of edema, disturbances of motility at times invariable loss of sensibility, and sometimes the development of hypaesthesia. The area of sensory loss is shown by sketches. The author states that a neuroma may develop at the point of nerve suture. Twice he has observed the development of ulcers in the operative scar.

The question of the transmissibility of irritation is discussed in detail. The fact that the sensation of pain may originate in the peripheral end of the cut nerve seems to depend on recurrent nerve fibers.

The nervous trophic character of these leg ulcers appears to be proved. In attempts to cure them the reflex arc must be interrupted at some point preferably in the sensory part. In sympathectomies only the descending, centrifugal impulses are interrupted, this accounting for the unsatisfactory ultimate results (recurrence after six months in 38 per cent of the cases, freedom from recurrence after one year in only 4 per cent).

With regard to the technique of neurotomy with immediate resuture of the cut nerve, the author advises a large skin incision but only slight mobilization of the nerve itself. The site of operation should be as far central as possible in order to avoid the possibility of ulcer formation in the wound. Other requirements are the use of local anaesthesia, section of the nerve with a razor scalpel, haemostasis by pressure with pledgets on the bleeding spot, suture with silk after the nerve ends have been approximated to within 2 or 3 mm, two epineural transversely passed coaptation stitches on both sides and in certain cases a few directing stitches to match up the inner topography of the nerve.

J VOLKMANN (2)

NIVEN J S F. The Action of a Cytotoxic Antiserum on Tissue Cultures. *J Path & Bacteriol* 1929 xxxi 577

The author made a study of the cytotoxic properties of rabbit serum for mouse tissue. These properties were developed by the injection of a suspension of mouse embryo tissue into rabbits.

The first evidence of cytotoxic action in the serum was an inhibition of emigration of fibroblasts when tissue such as embryo heart was cultured in the serum. Later on death of the cells was produced when an actively growing culture was exposed to the serum for a short time. When a suitable nutritive medium was substituted no further activity was shown by the cells. To produce a powerful cytotoxic serum it was found necessary to continue immunization over a long period.

It was noted that the mode of action of the anti-serum underwent also a qualitative change. At first under the influence of the serum, death of cells took place only after several hours and autolysis then followed. When a suitable medium was supplied the persisting cells of the culture resumed activity and emigration and mitosis occurred. At a

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Rubačev S. *Partial Congenital Macrosomia* (Macrosomia partialis congenita) *Trudy Belorus skogo Univ* 1933 xxi 3

This is a review of 12 of the author's cases of partial congenital macrosomia and 456 cases collected from the literature. In Rubačev's opinion, none of the classifications suggested for such cases to date is satisfactory.

The cases reviewed include 315 of involvement of a single portion of the body and 142 of involvement of a system. Ninety four of the latter were cases of unilateral partial macrosomia. Crossed partial macrosomia of which there were 14 cases is to be considered a continuation of the latter. Involvement of both upper or both lower extremities is called by the author 'paramacrosomia'. There were 26 cases of this type. Involvement of an entire system suggests a systemic causative factor such as is to be found only in an endocrine or neurogenic condition.

The question of involvement of the internal viscera still remains unanswered on account of the lack of sufficient data. Cases of hypertrophy of the right lung, the right kidney, and the right ovary of one breast, and of half of the scrotum have been seen.

The author has been able to collect 42 cases of hemihypertrophy of the face. Of partial macrosomia of all or a part of one extremity there are 273 cases of record. In 51 there was involvement of an entire upper extremity, in 71 involvement of the hand and fingers, in 67 involvement of an entire lower extremity, and in 83 involvement of the foot and toes. Accordingly involvement of the distal portions of the extremities is the most common.

In the fingers and toes a certain regularity is discernible. Involvement of a single finger is less common than involvement of several fingers. Involvement of single fingers or toes occurs most frequently in the second and third digits. Combined involvement of the second and third and the first second and third and the first and second fingers or toes has been observed. Combined involvement including the fourth and fifth digits is less common. In the cases reviewed there is no instance of isolated involvement of the fifth finger. The fifth toe was involved in 2 cases, and the fourth finger and toe in 1 case each. Involvement skipping 1 finger is rare.

In the author's opinion there is some relationship between macrosomia and trophic innervation which evidently corresponds to the cerebrospinal innervation only in part. Disproportionate growth cannot be regarded as a basis of classification as transition forms have been seen and in the same case proportionate growth occurs in one extremity and dispro-

portionate growth in another, a fact indicating that both forms of hypertrophy have the same cause.

Unilateral and crossed partial macrosomia have relatively seldom been found associated with disproportionate growth. The progressive growth of the involved part of the body and especially rapid growth after birth also indicate the participation of endocrine and neurogenic factors.

The cases reviewed show a slightly higher incidence of the condition in males than in females. This difference is apparent also in the single groups. Inheritance was evident in fewer than 15 per cent of the cases. In 23 per cent naevi were present. A much smaller number showed vitiligo. There was either a single very large pigmented spot or a number of very small spots. The naevi were often found on the hypertrophied parts but in some cases were scattered over the entire body. Vascular anomalies in the form of angiomata varicose nodules and aneurisms were found in 25 per cent of the cases. In 17 per cent, trophic disturbances were manifested by an increase in the temperature, increased secretion of sweat, hypersalivation, paresthesia, increased growth of hair, edema changes in the nails, or ulcerative processes. A lipomatosis was present in 42 per cent of the cases. Various malformations and underdevelopment of the mentality have been noted. Cryptorchidism is not uncommon. The simultaneous occurrence of various associated disturbances in 30 per cent of the cases proves that this is not a coincidence and that every associated disturbance is a sign of one and the same basic condition. Pathologic-anatomically there is both a hypertrophic and an atrophic process. Therefore the picture as a whole is a dystrophic syndrome.

On the basis of his own observations and his review of the literature regarding the etiology, the author concludes that partial congenital macrosomia is the expression of a disturbance of the trophic nervous system in the central or the peripheral portion. The extent and the character of the affection determines the localization of the macrosomia as well as the associated symptoms. The cause of the disturbance of the nervous system may be a gross anatomical process or the action of various secretions chiefly those of the hypophysis and the suprarenal glands. E. BANNER (1937) (Z)

Wischniewski A. *Experimental Clinical Studies on the Question of the Genesis and Treatment of Chronic Trophic Ulcers in Man* (Experimentelle klinische Untersuchungen zur Frage der Genese und Behandlung chronischer trophischer Geschwüre beim Menschen) *Arch klin Chir* 1929 cli 193.

This is a comprehensive work based on extensive clinical and experimental studies.

other cells depend upon connective tissue for their stroma (this function is held to constitute the physiological resistance to growth opposing an activating influence upon their stroma which all growing cells tend to exert. Growth occurs when the activating influence is sufficient to overcome the resistance and ceases when the resistance is adequately augmented in tadpoles treated with this substance there is a definite delay in metamorphosis and in nests so treated the rate of regeneration of parts lost by amputation is slower. When the substance is injected intraperitoneally into young mammals it causes an immediate arrest of growth, and when the injections are stopped growth is resumed. In pregnant guinea pigs the effect is cessation of the increase in weight followed by abortion.

In a number of rats into which the Jensen sarcoma was implanted the administration of this substance by mouth led to arrest of the growth of the tumor and often to its complete absorption. When the substance was injected intraperitoneally the first effect was obtained constantly but it was seldom possible to maintain the dosage long enough to secure retrogression of the tumor. The same dose is required for the arrest of the tumor as for the arrest of the animal's normal growth.

The suggestion is made that the physiological resistance to malignant growth is of the same kind as the physiological resistance to normal growth, and that both may be augmented in the same way.

The inhibiting substance described has no prophylactic value against implanted tumors probably because of the rapidity of its excretion.

MANUEL E. LICHTENSTEIN M.D.

Nicholson G. W. de P. The Histology of Teratomata. *J. Path. & Bacteriol.* 1929 xxxix 365.

Nicholson believes that teratomata are pathological manifestations of physiological growth. A true though malformed permanent kidney in a teratoma is described in support of this theory.

The specimen was a large unilocular retroperitoneal cyst a cystic teratoma in a female infant. On histological examination derivatives of all of the germinal layers were found. The differentiation of the tissues corresponded to that of a full term fetus. The blood supply from the left renal artery and the left branches of the aorta and the attachment of the cyst to the upper pole of the left kidney and adrenal indicate that it occupied a position in proximity with if not between these organs at a very early stage in embryonic life. The cavity of the cyst was comparable to a large myelocoele. The glandular lobules and cystic spaces indicated a true permanent kidney. This was clearly not a haphazard collection of renal tissue but a malformed organ. Both parts of the kidney were identified the collecting apparatus and the secretory substance. The left kidney was not normal its pyramids being reduced to five because of from three to five cranial reniculi.

The conclusion is drawn that the tumor was the result of a malformation of the somatic tissue of the

host and that it originated and was developed *in situ*.

The author states that teratomata should not be spoken of as rudimentary embryos. An embryo is an independent individual whereas a teratoma is a part of the body of its host. Teratomata in general contain none of the regions characteristic of the body nor any evidence that their development is comparable with that of the embryo.

The permanent kidney of the retroperitoneal teratoma described was not one of its own tissues but the missing cranial reniculi of the left kidney of the host. A teratoma with a metanephros as a primary constituent has not yet been reported.

The tissues of teratomata are no more nor less the result of self differentiation than the corresponding somatic tissues. Whenever there are clear indications that they are reactions in the body, the indications are equally clear that they are reactions in teratomata. Differentiation is therefore the expression of the same physiological principles of growth in the body as in teratomata. W. N. ROWLEY M.D.

Straub G. F. Desmoid Tumors. *California & West Med.* 1929 cxix 186.

The term desmoid tumors coined by Saenger is applied to a group of rather rare neoplasms occurring chiefly in the abdominal wall and having their origin in the tendinous structures the aponeuroses or the inscriptions tendineae of the abdominal muscles. They entirely lack muscular elements. At times they assume the macroscopic appearance of sarcomata without becoming histologically sarcomatous. Macroscopically they are characterized by similarity to the mother tissue in their character and arrangement nodules knotty appearance hard and elastic consistency and the peculiar grinding sensation which is noted when they are cut. Microscopic examination shows them to be hard oligocystic more or less vascular tumors consisting chiefly of connective tissue of the aponeurotic type. Malignant change is always secondary.

These tumors occur more frequently in women than in men and are more common in parous women than in others. They grow slowly but have been known to attain the size of a man's head. Trauma is probably not a factor in their development.

Their treatment is early radical removal.

The author reports a case of desmoid tumor.

W. N. ROWLEY M.D.

Blair J. The Mechanism of the Cancer Death and the Relation of Pernicious Anæmia to Cancer. *J. Cancer Research* 1929 cxix 142.

Blair is of the opinion that there is a relation between pyæmia, pernicious anæmia and cancer by reason of an apparent common origin and by reason of their possible co action in the same person.

He believes that death in cancer which is not due to starvation hæmorrhage or pressure on vital organs is usually the result of toxæmia and urinary tract infection.

later stage of immunization the rapidly acting cytotoxin which had been developed while killing the cells appeared to inhibit the subsequent autolysis.

The antiserum acted on cultures of normal epithelial cells (kidney, liver, intestine), carcinoma M 63 (Imperial Cancer Research Fund) and a spontaneous adenocarcinoma of the mouse as well as on various mesoblastic elements fibroblasts mesothelial cells, macrophages etc. The changes produced were studied in fresh preparations alterations in the form and in the behavior of the cells to supravital staining, by neutral red being noted. In addition, the changes in the cells were investigated after fixation and staining by various methods.

The cytotoxic action took place most rapidly at 37.5 degrees C., more slowly at room temperature, and not at all at 0 degrees C. Fixation of cytotoxin by the cells occurred for when the cells were transferred to 37.5 degrees C the cytotoxic action took place with great rapidity. When the rapidly acting antiserum was heated to 56 degrees C its cytotoxic action was not entirely destroyed but underwent a modification characterized especially by delayed action and the production of vacuoles in the cytoplasm. The action of the heated antiserum was completely restored by the addition of normal rabbit's serum which by itself was devoid of rapidly acting cytotoxic properties. It therefore appears that complement is essential for the occurrence of rapid and intense cytotoxic action although a thermostable antibody may by itself produce a certain amount of damage to the cells as shown by histological changes.

When the antiserum was tested on cultures of the tissues of other animal species it was found that on the tissues of the embryo rat the effect was similar to but slightly weaker than the effect on mouse tissues. On embryo chicken and guinea pig tissues the effect of the antiserum was no more intense than that of normal rabbit's serum which appears to be related to the normal content of heterophile antibody in rabbit's serum.

The conclusion is reached that a specific antibody has been developed for mouse tissues which acts also on those of a related species the rat. The antiserum shows in addition to its cytotoxic properties, a slight hemolytic precipitating and complement fixing action.

MARCEL E. LICHTENSTEIN, M.D.

Heaton, T. B. The Effect of Inhibition of Connective Tissue Growth by Means of Substances Present in Tissue Extracts. *J. Path. & Bacteriol.* 1929 LXIII 565.

The author discusses the resistance of the body to malignant disease. According to his theory cancer cells however abnormal may possess no properties which are absolutely new. Although exaggerated and disproportionate their properties do not differ more than quantitatively from those common to all growing cells. A large number of tissues continue to show cell division throughout adult life and some means must exist whereby this growth tendency can be kept under restraint. The fact that human can-

cer common as it is, is not universal is in itself an indication of a mechanism to oppose it. The existence in the normal body of a means of resisting physiological growth is well illustrated by the structure of an intestinal villus. Here an epithelium in a constant state of active proliferation maintains its proportions unaltered throughout adult life. The proliferating epithelium is supported by a static stroma of vascular connective tissue which passively resists epithelial expansion by limiting the amount of blood supplied to the active epithelium. Since *in vitro* connective tissue cells themselves show no tendency to differentiate but continue to proliferate this inhibiting property of connective tissue is not an inherent property but an influence possibly conveyed to it by the blood stream.

The tendency of malignant tissue to infiltrate is inhibited also by the resistance of connective tissue to infiltration. The development of a benign tumor such as a corn may lead to no invasion of the connective tissue in spite of the development of enough tension to produce pain. A cystic adenoma of the ovary or villous tumor of the bladder illustrates the extent to which epithelial proliferation may be exaggerated without causing any interruption in the line of demarcation from underlying tissues.

Therefore connective tissue has two functions as regards the development of neoplasms: first inhibition of epithelial proliferation and second resistance to invasion. The development of benign tumors is due to the inactivity of the first function while the development of malignant tumors is due to the inactivity of the second function. Since benign tumors may become malignant it is possible that a break down in both functions may occur either simultaneously or consecutively.

The author then presents evidence in support of his views. In a number of animal organs he found a thermostable chemical substance which had a definitely selective action upon the tissues of the embryo chick growing in culture *in vitro*. The growth of fibroblasts was inhibited in its presence, while that of epithelia was unaffected.

This inhibiting substance is not toxic to the fibroblasts but merely prevents their proliferation. Its action upon them is antagonized to a slight but quite definite extent by the presence in the vicinity of the fibroblasts of growing epithelial cells and by the growth promoting substance which is also present in tissue extracts particularly those of embryos. When *in vivo* connective tissue otherwise dormant displays growth these two factors are presented by stroma for a developing gland or a growing tumor and the transient activity of granulation.

The effect of administering to young animals a substance obtained from brewer's yeast or malt is described. This substance appears to be the same as one which in tissues cultured *in vitro* specifically inhibits the multiplication of connective tissue cells, i.e., fibroblasts. Its action *in vivo* is perhaps to supplement a normal function whereby an increase of the body's connective tissue is prevented. Since all

through them to German surgery. Billroth was a confessor. His early clinical statements from Zurich and Vienna report with utter candor and the sharpest self criticism successes and failures in a material accounted for without an omission. His love of truth was an important moral legacy to German surgery. It has served as a shining example to his contemporaries and to those who came after. All who call themselves with pride German surgeons are his pupils. They honor in reverence and gratitude the memory of their greatest teacher and master.

SEITZNER (Z)

Melnikov A. The Results of Russian Surgery During the Last Twenty Five Years. (*Die Ergebnisse der russischen Chirurgie im Zeitraum der letzten 25 Jahren*) *Vestn. Chir.* 1928 xiv 302

In Russia the years from 1901 to 1915 constituted the period of highest achievements in morphological surgery, and the years from 1915 to 1920 the period of military surgery with suspension of most of the Russian surgical journals. The culminating point of the latter period was the year 1918. In 1920 began a period of reawakened activity in scientific work and of luxuriant flowering of the medical press surgery began to follow biochemical and biophysical lines. In the last period the interest of Russian surgeons has been centered in the fight to lower postoperative mortality in which great success has been achieved.

The number of surgeons in Russia presents interesting fluctuations. In the eleven years just preceding 1905 the number increased by 33 in the period from 1905 to 1914 it trebled (1 532) and in 1926 there were 5 300 Russian surgeons in spite of the fact that a number of thickly populated provinces were lost to Russia. In 1914 the surgeons constituted one twentieth and in 1924 one ninth of all the physicians of Russia. The number of those who occupied themselves exclusively with surgery varied between 70 and 80 per cent of the total number of surgeons. In 1896 there were no women surgeons, in 1905 there were 6 in 1914 35 and in 1924 470 i.e. more than one seventh of the total number of surgeons.

Seventeen pan Russian surgical congresses and 6 Ukrainian Caucasian and other congresses with a total of 1 884 addresses indicate the rapid growth and activity of Russian surgery. The number of Russian works in 1925 (215) exceeded but only slightly that for the period before the war (187). The favorite subjects were diseases of the urinary organs stomach and liver. The number of articles by Russian surgeons published in German periodicals (503) amounted to one fourth of those published in

Russia. The chief subject was abdominal surgery (155 articles). The number of monographs and text books is steadily increasing. Among the subjects of dissertations first place is taken by the urinary tract and second place by the gastro intestinal tract.

In 1926 the teaching in medical schools was carried on by 75 faculties with 124 professors of surgery.

Reports from the clinics and hospital services indicate a change in recent years from local anesthesia (preferred before the war) to general anesthesia. This is explained on the one hand by the presence of young physicians and on the other hand by the greater seriousness of the operations performed today as compared with the period before the war. Most common are abdominal operations the number of which has increased greatly since the war. The number of operations on the extremities shows a marked decrease. Operations on the face are very frequent those on the brain extremely infrequent. Before the war the average postoperative mortality was 2.3 per cent. Since the war it has been 3.2 per cent. The increase is explained by the more extensive employment of operative treatment.

The borderline specialties especially orthopedics and urology are continually rising in esteem, and special societies with their own congresses are being formed for them. Stomatology surgery of the nerves and pulmonary tuberculosis have also been recognized as specialties. At the close of 1925 there were 7 surgical societies not including the surgical sections of medical societies and the Russian Surgical Association which existed before 1890 includes all Russian surgeons and is responsible for the pan Russian congresses. Several surgeons of the first rank have established their own schools. Some of these schools are of the hospital type and others of an academic character. Still others pursue a more theoretical, scientific line.

In his conclusion the author emphasizes the many disadvantages under which the Russian surgeons are working, among which he mentions the small number of beds in most of the clinics and many of the private institutions. On the other hand a number of special institutions have exceptionally good equipment which favors rapid scientific progress in the branches of surgery they represent. E. BARKER VOIGT (Z)

McGraw T. A. Operations on the Thyroid Gland. *Bull. Johns Hopkins Hosp.* Balt. 1929 xlv 172

This article was the first report in America of the complete removal of the thyroid gland and was published in the *Detroit Clinic* in 1882. It is reprinted in the *Bulletin of the Johns Hopkins Hospital* because of its historical interest.

SAMUEL KARY M.D.

As urinary tract infection is commonly present in cancer and is apparently of hematogenous origin, Blair regards it as reasonable to assume that other tissues in the body are also subjected to the lodgment of micro-organisms by way of the blood stream and that this bombardment of traumatized or irritated tissues by hematogenous infection from a chronic focus of low grade infection is indirectly the cause of cancer. He suggests that the energizing factor in the continuous growth of the cells may be chemical and partially influenced by certain toxins given off by the chronic focus of infection the lessened alkalinity of the blood and chemical substances set free by the destruction of the blood borne micro-organisms at the site of the cancer which are derived from the destroyed bacteria or from the body of the leucocyte or macrophage that may be destroyed while destroying the micro organism.

A review of the literature and experience with focal infection seems to indicate that in all cases with a chronic focus of infection such as an abscessed tooth, pyorrhea, diseased tonsils and adenoids, or chronic sinusitis a secondary hematogenous infection is set up in the urinary tract and that therefore pyuria of any degree of chronicity which recurs or fails to respond to treatment is a strong indication of a chronic focus of infection outside the urinary tract.

If these conclusions are correct the prophylaxis of cancer necessitates the removal of chronic foci of infection.

JACOB M. MORA, M.D.

DUCTLESS GLANDS

Boyd J. D. Miligam J. E. and Stearns G.
Clinical Hyperparathyroidism *J. Am. M. Ass.*
1929 XLIII 684

Clinical hyperparathyroidism may give rise to functional impairment of the gastro intestinal renal osseous, and muscular systems. It causes excessive elimination of calcium salts in the urine with an increase of the calcium concentration in the serum. The bone salts are mobilized and varied types of bony dystrophy may result. While most bone lesions are representative of osteitis fibrosa generalisata some of them have been histologically indistinguishable from giant cell tumors. The characteristics of the urine may simulate those of renal insufficiency.

The authors cite four cases in which the clinical and laboratory findings led to exploration of the parathyroids and the removal of a parathyroid adenoma resulted in relief of the symptoms.

SAMUEL KAHN, M.D.

HOSPITALS, MEDICAL EDUCATION AND HISTORY

Payr Opening Address and Billroth Memorial Lecture (Eroffnungsansprache und Billrothgedenkrede) *53 Tag d. Deutsch. Ges. f. Chir.* Berlin 1929

The 1929 Congress of the Deutsche Gesellschaft fuer Chirurgie celebrated the hundredth anniversary

of the birth of Theodor Billroth. Payr reminded his hearers of the Billroth Festival to be held at Vienna on April 9 and 10 and urged the attendance of as many as possible of the German surgeons stating that such an opportunity of affirming brotherly feeling with their Austrian colleagues and of bringing proof of the true fellowship of all German surgeons should not be lost.

The influence of the life work of Billroth one of the greatest geniuses among the pathfinders of medicine on the art, science, and development of German surgery was a powerful one. Billroth's new creative operative conceptions his technical achievements and the successes that he was the first to obtain are by no means all of his intellectual legacy. He was the founder of modern abdominal surgery, since the resection of diseased portions of the stomach which he performed successfully after careful preparatory work and was the first to do outlined the principles for all operative work on other parts of the digestive tract. He was the originator also of the surgical removal of the cancerous larynx and oesophagus. In the fields of thyroid extirpation and plastic bone surgery his work opened up hitherto unexplored regions and in addition he prepared the way for operative gynecology. In an exemplary manner he showed German surgery the methods by which a new field of work should be approached to achieve good results.

Billroth was the first German surgeon with a profound knowledge of the finer tissue changes in pathological states which are revealed by the microscope. He recognized that surgery would become scientific only as the result of investigation of the causes and the nature of diseases. He was both a pathologist and a surgeon. Up to his seventieth year he wrote only on pathology. In his studies on wound healing he was the direct precursor of Marchand. His theories regarding the causes of malignant tumors the starting point of which he held to be plant cancer agree with views held today. By him surgery first came to be regarded from the standpoint of 'natural history'. He was a true investigator of nature in the working garb of the surgeon. His magnificent work *Die allgemeine chirurgische Pathologie und Therapie* was and for a generation remained the bible of his fellow surgeons throughout the world.

Billroth was the founder of the greatest and most successful school of surgery which filled with its pupils a great number of the professional chairs of Austria Germany Holland and Belgium. His creative talent the new line of work which he opened up his powerful and noble personality full of true human dignity attracted to him the most gifted of the oncoming generation. His school has achieved great things. It has guarded faithfully and out of its own strength has increased the heritage left by its master. Its fellowship with him was maintained into the third generation.

Billroth's magnificent letters are a precious legacy from a German surgeon to his contemporaries and

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INTERNATIONAL ABSTRACT OF SURGERY

MARCH, 1930

LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., CHICAGO
Dean Northwestern University Medical School

BENJAMIN W. DUDLEY AND THE SURGICAL RELIEF OF TRAUMATIC EPILEPSY

CHARLES BALLANCE¹ states that Victor Horsley,² after examining the skulls in the Broca Museum in Paris in 1887 suggested that many of the trephine openings indicated that the operations had been performed for the relief of 'Jacksonian' epilepsy. Professor Lucas Champonniere³ is in agreement with Horsley that prehistoric trephining was definitely a remedial measure. Neuberger⁴ is authority for the statement that the Chinese surgeon, Hoatho, in the third century performed the operation of trephining.

While Hippocrates employed the trephine, it would appear that from the time of the Athenian 'Father of Surgery' until the early part of the nineteenth century little progress was made in the surgical attack on injuries involving the brain. Percival Pott (1713-1788) the earliest British surgeon to give much attention to brain injuries frequently mentions the operation of trephining. He noted that symptoms arising from head in-



BENJAMIN W. DUDLEY¹
(1785-1870)

juries were not due primarily to the injury of the skull but to damage to the brain beneath. The great French surgeon, Jean Louis Petit⁵ advocated the free use of the trephine and called special attention to the pressure from extravasations of blood between the dura and the bone. He further recommended the use of the trephine in convulsions—not to cure the convulsions, but to remove the cause.

Sir Astley Cooper,⁶ a pupil of John Hunter and of Henry Cline (1750-1827), relates the case of a Mr. T. age thirty one, who on January 20, 1822, six months subsequent to a head injury suffered an epileptic attack. Decompression was advised but was postponed until the thirtieth of July. The attacks having increased in frequency, a decompression was done by a Mr. Hempsted Cooper says.

The patient speedily recovered from the operation and has not since had any return of the epileptic fits.

He gives the indications for the use of the trephine as follows:

¹ From a portrait by Joubert owned by Mrs. R. West Peter.

² A Glance into the History of the Surgery of the Brain, London 1892.

³ Journal of Anthropological Institute 1888.

⁴ Les origines de l'opération décompressive 1923.

⁵ History of Medicine I. English translation by Ernest Flaydun.

⁵ Jean Louis Petit, 1674-1750. He was the first to open the mastoid process (Garroon's History of Medicine).

⁶ Sir Astley Cooper (1768-1841) Lectures on the Principles and Practice of Surgery 1830.

EDITOR'S COMMENT

WILSON'S report to the Medical Research Council of the results of the tannic acid method of burns (p. 256) is prefaced by the interesting statement that this is "one of the most important recent advances in modern therapeutics." The report is based upon the results obtained in 117 cases treated at the Royal Edinburgh Hospital for Sick Children and the Edinburgh Royal Infirmary. Of the 117 patients, all but 12 were under ten years of age. Of these patients 11 died, a mortality of 10.48 per cent. Of the total number 13 died, a mortality of 11.11 per cent. This death rate is compared with a mortality of 33.7 per cent in a series of 300 cases, reported by Fraser, in children under ten years of age who were treated by other methods. Davidson (*SURG. GYN&C & OBST.* 1905, xli, 202) to whom chief credit is due for developing this method of treatment and for calling it to the attention of the medical profession, Bancroft and Rogers (*Ann Surg.*, 1926, lxxiv, 1), Beck and Powers (*Ann Surg.*, 1926, lxxiv, 19), and Montgomery (*SURG. GYN&C & OBST.*, 1929, xlviii, 277) among American surgeons have reported their results with the tannic acid method in several large series of cases. No one who has read the reports or seen their results can doubt the statement of Wilson quoted above.

The constant search for more accurate and unequivocal diagnostic criteria is emphasized in MacGregor's concise discussion of the diagnosis of tumors of the spinal cord (p. 62). MacGregor stresses the importance not only of differentiating cord tumors from other pathological conditions involving the cord, but of determining whether a tumor is outside the dura within the dura and outside the cord, or within the substance of the cord. In connection with his discussion, Alajouanine and Petit Dutaillis report of a case of compression of the cauda equina by

a tumor of an intervertebral disk (p. 203) and Dandy's report of two cases of compression of the spinal cord by a displaced fragment of an intervertebral disk (p. 246) are of especial interest.

Heuer's discussion upon the surgery of mediastinal dermoids (p. 208), Mixer and Clifford's report of three cases of entodermal cyst of the mediastinum (p. 208) and Robertson and Brown's report of a case of dermoid cyst of the mediastinum (p. 207) indicate the increasing interest that is being manifested by surgeons in different parts of the world in these unusual and, until recent years, almost invariably fatal cases. Complete removal of the mediastinal tumor and closure of the thoracic wall are emphasized as the most important factors in securing a successful outcome. Drainage and tamponade of large cavities result in widespread infection with a resulting high mortality or, at best the necessity for extensive thoracoplastic operations to secure obliteration of the cavity and healing.

Wolfer's experimental study of the healing process in the cystic duct after its division and ligation brings out the interesting fact that the presence of gauze drains leading to or near the ligated duct prevents the formation of exudate about the duct or forms a pathway by which the exudate is carried away. Since the organization of this exudate about the stump of the duct is the important factor in its obliteration, its loss predisposes to failure of healing and consequent leakage of bile.

The indications for operation in recent fractures of the long bones, the complications which may follow operations for fracture, and the frequency with which gas gangrene occurs in compound fractures, discussed in interesting papers by Scudder (p. 248) and Darrach (p. 248) are two of many of the stimulating and helpful abstracts appearing in this month's issue.

During the months of February, March and the beginning of April he was constantly confined with a severe affection of his head attended by violent epileptic fits every five or six days.

The trephine was used on the 16th day of April, two circular pieces of bone being removed corresponding with and including those portions which by previous examination seemed to be depressed. The pericranium was remarkably thickened and morbidly sensitive. The bone was porous and admitted of large processes of this membrane and of blood vessels to pass directly to the dura mater.

After the operation was completed I was astonished on turning my attention to the dura mater, to discover a copious secretion of fluid which separated that membrane from the surface of the brain more than half an inch, while that organ in place of giving to the finger a sense of pulsation felt as hard and as unyielding as a board.

It was now ascertained on examination the fifth day that the fluid beneath the dura mater was absorbed. The brain had regained its proper level and pulsated with unusual vigour; no convulsion had occurred since the operation.

From an occasional intercourse with this patient for many months after all professional attendance and advice were suspended I am prepared to pronounce on the cure as radical.

CASE II

In the spring of 1825 W T, a young gentleman twenty-one years of age in company with his mother, came to this place from South Carolina and from the mother was received the following history of her son's case.

When five years of age he received a severe blow accidentally on the superior and middle portion of the left parietal bone. Being at school he was able to go home on foot without giving any particular manifestations calculated to excite alarm. On the ninth day he became suddenly apoplectic and paralysis of one side ensued.

The physicians of his vicinity who were consulted differed in opinion concerning the cause and seat of his malady as did most of those in the southern states to whom application was made for professional assistance. The father of the young man had by letter consulted professor Thysick and Chipman who discouraged any effort at relief by an operation.

After receiving this history of the situation of the patient from the mother upon turning to himself with a view to additional information I observed a stammer in every attempt at enunciation while his memory had become so entirely treacherous that he could no longer recite with any degree of accuracy an event which had transpired within two days his recollection being good however in rela-

tion to circumstances of his childhood. For most particulars in relation to his daily history, even in reference to the operation of a dose of medicine it was necessary to consult his mother.

A cicatrix on the side of the scalp pointed out the seat of the original injury. Under all these discouraging circumstances after a few days' preparation the operation was resorted to on the 10th of May, 1825, to relieve him of an injury, the consequences of which had been accumulating upon him for sixteen years. A small depression of bone appearing manifest, corresponding with the original site of the injury indicated the point upon which to apply the trephine. The crown of the instrument was made to embrace the depressed bone which when removed presented a process projecting from its inner surface about one inch in length, of the size of a small quill at its base the extremity tipped with soft cartilage. This spiculum of bone had penetrated the dura mater and communicated with a large preternatural sinus from whence issued a stream of blood as thick as a man's little finger, which continued to flow from the instant the bone was removed until from the quantity lost, it was judged proper to check it by means of pressure.

The dura mater was diseased presenting a dark blue appearance over a space nearly as large as the opening in the cranium made by the trephine while the sinus beneath appeared to be from an examination made by the little finger more than an inch in depth, and of equal width.

The patient had no convulsion after the day on which the operation was performed, a manifest improvement in his memory became perceptible in a few days to all around him. His stammer, which appeared to proceed from an indistinct recollection of things very suddenly vanished his eye which had been half closed heavy and inanimate, was now sprightly and intelligent. In ten days he left his room and at the end of six weeks he returned home in the enjoyment of perfect health traveling a distance of five hundred miles in the month of July in ten or twelve days.

CASE III

Golfourth a young man of Jessamine county, Kentucky aged twenty three years when five years old received a kick from a horse which fractured and depressed a portion of the right parietal bone. The immediate symptoms were not particularly alarming notwithstanding a wound also in the scalp nor was there any extraordinary defect either in general health or constitutional development until about the fifteenth year of his age when, without any assignable cause he had for the first time an epileptic convulsion.

From that time he continued to be the subject of epilepsy every second third and sometimes fourth week according as the exciting causes acted with more or less intensity. The continuance of epilepsy for eight years had reduced his constitutional vigour, and rendered his system morbidly excitable.

¹ Philip Syng Physick (168-1833) & Chas. and Chipman (1780-1833)

- 1st Where there is extravasation of blood between the dura mater and skull
- 2nd In fractures of the skull with symptoms of compression continuing after depletion
- 3rd In simple fractures with depression and continued symptoms of compression
- 4th In compound fracture with depression unattended with symptoms of compression, it is best to trephine or to raise the depressed bone by the elevator
- 5th When matter has formed

On the danger of the operation Cooper continues

Some surgeons say that this is a trifling operation and not difficult to perform but they would deceive you, it is one of the most dangerous operations in surgery whilst performing it there is but a thin web between the instrument and the brain cut through this and destruction of life will generally be the consequence Mr Hunter thought that when the dura mater was wounded the person scarcely ever recovered which opinion though not exactly borne out by the cases which have since occurred shows the impression made on the mind of a man who was so great an observer of nature

Larrey, Napoleon's surgeon general, makes frequent mention of traumatic epilepsy and relates one case of cure by operation

William Charles Wells¹ describes an injury to the skull of a negro sailor caused by the blow of a hammer A marked depression in the right parietal bone was discovered and the patient was trephined by the surgeons of St Thomas Hospital in December, 1804 The inner table of the skull disclosed a new plate of bone from the edge of which there rose a small conical spicule of bone about one-eighth of an inch in length This was removed at operation The patient when seen ten months later had greatly improved in health his hemiplegia had practically disappeared, but he was still liable to convulsions when excited Wells concludes

From this case it seems to follow that epilepsy and palsey, originally induced by a mechanical stimulus applied to the brain may continue long after that stimulus has been removed

Between 1818 and 1827, Benjamin W Dudley,² Professor of Surgery in Transylvania University, Lexington, Kentucky, attacked surgically five cases of traumatic epilepsy In each of these cases Dudley performed a decompression operation with a trephine

¹Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge 111 London 8 18 18 (1797-1807) born in Charleston S C described rheumatism & diphtheritis received the M.D. from New York in 1814 and is graciously mentioned by Charles Darwin in his preface to "The Origin of Species."

²The Transylvania Journal of Medicine Vol I 8 8.

THE TRANSYLVANIA

JOURNAL OF MEDICINE,

AND THE ASSOCIATE SCIENCES

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ORIGINAL COMMUNICATIONS.

ART I.—Observations on Injuries of the Head. By BENJAMIN WELLS, M.D. Professor of Anatomy and Surgery in Transylvania University Member of the Royal College of Surgeons, London.

THE great authorities of Europe and of our own country have laid down certain principles by which practitioners are generally governed in the treatment of injuries done to the scalp, cranium and brain. Since the publication of Mr Abernethy's invaluable paper on injuries of the head, it might seem that little remains to be done in that department of surgery while it is more than probable that under the present organisation and management of the crowded hospitals of the large cities in Europe no interesting and salutary innovations will be suggested whereas in the United States, and especially in the valley of the Mississippi, where there is comparatively no human misery no remarkable excesses in luxury no crowded manufactories, and no large cities where every individual partakes of nourishment equally healthy and temperate the fairest prospect is offered of giving new and increasing interest to this subject.

B

Facsimile of introductory paragraph of Dudley's original article

CASE I

In the month of September, 1818, Mr K, a carpenter of this town called to consult me on account of a severe pain in the superior and posterior part of the cranium which had afflicted him for nine months A succession of tumors had at various periods appeared about the seat of the pain Upon an examination in place of tumors two very sensible depressions were discovered on the surface of the skull attended by extraordinary sensibility in the integuments of the parts About Christmas all the symptoms became aggravated and severe epileptic convulsions ensued His convulsions were so frequent and violent in the latter part of winter that it was apprehended he would speedily fall a victim to his disease

In the early part of the winter I urged the propriety of trephining the cranium under an impression that a morbid growth on the inner surface of the skull was now aggravating even if it had not caused his malady In April he determined as previously advised to submit to an operation

ceiving no pulsation in the brain I pressed my finger on the surface of the dura mater and discovered a considerable collection of fluid beneath it, which, in the opinion of Professor Short¹ and other gentlemen present, separated the brain from its investing membrane not less than half an inch. On the fifth day from the operation, suppuration was established in the wound. The dressings being now removed the brain was perceived at its proper level pulsating while the whole of the fluid was absorbed. The progress of this case was extremely flattering for the first two weeks after which in consequence of indulging a craving appetite and possibly because the operation was partial in its effects, the epileptic convulsions recurred, and thereby the benefits of the effort at relief are rendered extremely problematical. Some months after this patient returned home I learned that his convulsions were less frequent and more mild in character than they were previous to the operation.

Dudley was the first American surgeon to give special attention to decompression for the relief of epilepsy, and the first to report any considerable series of cases. In the second volume of the *Transylvania Journal of Medicine* there is reported a case of epilepsy by Dr Cartwright of Natchez, Mississippi under date of November 3, 1828. This case report sent to Dr Dudley describes a decompression operation in which a large coagulum of blood beneath the inner table of the skull was removed. The patient had suffered from repeated epileptic attacks subsequent to a blow on the head which entirely ceased after the operation and recovery.

The first medical article published by Dr John S Billings² was entitled The Surgical Treatment of Epilepsy.³ Billings described two cases which he personally observed in the practice of Dr George Blackman⁴ of Cincinnati. The decompression operation in each case resulted fatally. Billings lists in his thesis seventy two cases in which the decompression operation had been performed sixteen of which proved fatal, forty two were reported cured four unimproved the remainder improved but not entirely relieved. In the list of cases cited by Billings no operator is credited with more than three

except Dudley and Daniel Brainard of Chicago
Dudley's cases were reported in 1828, Brainard's
in 1850⁵

The surgical opinion of the day is well expressed by Samuel D. Gross⁴ who indicated that the results cited by Dudley were not duplicated in the practice of other surgeons.

I have myself had occasion to perform the operation four times with the effect of one cure and three deaths and I have witnessed its execution in three other cases all of which terminated fatally. Nearly all the patients perished within the first week from inflammation of the brain and its envelops.

Dudley's results challenge modern antiseptic brain surgery. As he points out in his original article, he could not hope for as satisfactory results in populous cities and crowded hospitals, giving credit to the clean pure air of the frontier regions of central Kentucky.

Benjamin Winslow Dudley was born in Virginia in 1785, the family removing to the vicinity of Lexington in 1786 and to that city in 1797. After a short apprenticeship under Dr. Frederick Ridgely, an eminent practitioner of Lexington, he entered the University of Pennsylvania in the autumn of 1804. In 1805, he returned to Lexington becoming an assistant to Dr. Fishback, a local practitioner, and in the autumn of that year returned to the University of Pennsylvania from which institution he received the M.D. degree in March, 1806. After a few years of general practice in Lexington and vicinity, he spent the period of 1810-1814 in Europe visiting the great clinics of Paris and London. He was primarily known as a lithotomist having performed lithotomy 225 times—the first 100 without a single death. Dudley wrote but little, and his remarkable article referred to herein must have resulted from a strong conviction of the efficacy of surgical relief from epilepsy by means of the decompression operation. He took a deep interest in the development of the Transylvania University Medical School which at one period of its history boasted the ablest faculty of any American school. On one occasion having a personal difficulty with Daniel Drake (1785-1852) at the time a member of the Transylvania faculty he challenged Drake to a duel which Drake declined his place being taken by a friend.

¹Charles Walk Short 1794-1801 F is an excellent sketch see
Some American Medicinal Botany by Howard A. Kelly

[illegible]

³ The *Chicago Daily Tribune* and *Observer* n. s. vol. 4 p. 334, 1867.

George C. Blakeman (1850-1893) Billing: a teacher in the Medical College (Ohio) Cincinnati

³Chicago Medical Journal

System of Surgery vol 4 Philadelphia 1873

One of the most fascinating characters in American medicine easily the greatest physician of his time west of the Alleghenies, author of the epoch making treatise, Diseases of the Great Valley of North America 2 vols. 1840-1852.

The condition of his mind was still more deplorable his memory having undergone almost a total extinction. In the latter part of February, 1826, after spending a few days in preparing the system the operation was performed in the amphitheatre in the presence of all the class.

The external incision being made, the trephine was applied in such a manner as to cover the larger portion of the depressed bone. In two or three turns of the instrument, the cranium was penetrated in one point of the circle, and through this opening which could have been closed with the small end of a surgeon's probe transparent colourless serum flowed during the balance of the operation.

The circular piece of bone being removed the dura mater was found defective to the extent of a twelve and a half cent piece of silver which exposed a sinus reaching down to the petrous bone near the base of the skull. A spinous process projected from the inner table of the bone about half an inch long its base being of equal dimensions. A small portion of the spinous process was not included by the trephine, this was removed by means of a strong pair of forceps. The sinus in which the serum was collected was large enough to receive a hen's egg. The patient had two light attacks of epilepsy on the second and third days after the operation but on the fourth suppuration was established the dressings were renewed and he began to give assurances of a successful issue by a more sprightly and animated countenance. Each successive dressing was accompanied by new evidences of intellectual and corporeal improvement, and at the end of the fourth week the wound having cicatrized the patient returned home in the enjoyment of perfect health.

CASE IV

O'Brien a man of middle age, came to this place in the summer of 1826 and gave the following history of his case. About four years previous to that time while engaged in raising a house near Cleveland Ohio he received by accident a blow on the side of his head which deprived him of motion and of the use of his intellect for several weeks. He had scarcely recovered from the immediate effects of the injury when he was attacked by severe convulsions while he was never free from pain in his head, jaws, neck, chest sides and abdomen. Upon examination, I found most of the muscles of his system in a state of morbid contraction. The organs of speech were exerted with great difficulty, and his enunciation was very indistinct.

His senses of taste and smell were nearly destroyed—the fragrance of the rose and the offensive stench of the thoro apple were alike to him. His fingers were constantly in a state of semiflexion while the abdomen was habitually and painfully tumid. I have never seen a patient under any circumstances, who appeared to be the subject of such unceasing agony. For weeks in succession his convulsions recurred daily, producing most terrific

contortions of his entire system. A large cicatrix with apparent depression extended in the direction from behind the external canthus of the right eye to the central portion of the parietal bone of the same side.

After a few days' delay with a view to preparation the trephine was used nor were there any very remarkable manifestations about the wound except in the increased vascularity of the dura mater. But in the course of the same evening after the operation the patient expressed himself as being "unlocked" in all his limbs while there was a most pleasing and perfect relief to the organs of speech. On the third day from the operation suppuration having commenced the wound was dressed and thus far the patient gave the strongest manifestations of a speedy recovery in the relief of all pain in his head, throat, chest and extremities and in his faculty of deglutition and of speech. The rigidity of the muscles and the tumid condition of the abdomen had also nearly disappeared. About the sixth day from the operation he experienced a light epileptic convulsion. The relief however which had been afforded was followed by a ravenous appetite and he was constantly inclined to commit excess in eating both in the quality and quantity of his food. By the tenth day from the operation he had so far recovered as to be enabled to take exercise in walking through the town, while he manifested great impatience in being controlled. From the tenth to about the twenty-fifth day after the operation the patient had several light convulsions. He continued however to improve in his general health and being impatient under further restraint withdrew himself secretly from my superintendence and I have never heard of him since.

CASE V

From the neighborhood of Bairdstown in this State, a man of middle age, received a blow on the posterior and superior portion of the left parietal bone fifteen years ago and came to this place for professional assistance in April 1827.

According to the best history given by his brother and himself of his case a manifest defect of his memory was perceived in a few weeks after the accident was sustained yet it was two years before convulsions supervened and these have continued to recur for the last thirteen years at very irregular periods, the patient sometimes having half a dozen a day yet about every fifteen days the convulsions are more sensibly severe. At present, he is in a state of fatuity. The tenuity of the integuments upon and immediately surrounding the cicatrix on the site of the original wound gave deceptive appearances of slight depression of the skull at this part. When the bone was laid bare however in the operation there was no preternatural appearance except in the close and morbid attachments of the pericranium. A circular portion of the skull being removed by the trephine the dura mater presented a healthy appearance as did the bone also. Per-

ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Hyndman O R and Light G The Branchial Apparatus Its Embryological Origin and the Pathological Changes to Which It Gives Rise with a Presentation of a Familial Group of Fistulae *Arch Surg* 19 9 xiv 410

The authors discuss the embryological development of the branchial apparatus and review the literature on the subject They state that branchial cleft anomalies—cysts and fistulae—result from failure of absorption of the included ectodermal and entodermal epithelium that is buried during the growth and fusion of the branchial arches in early embryonic life They may arise from the remains of either the second or the third arch The thymic stalk plays no part in their formation The cysts are unilateral They may be lined with an epidermoid type of epithelium or columnar mucus forming cells Many of the submaxillary cysts and so called ranulae are of branchial origin Branchial cysts are to be differentiated from adenitis cystic hygromata, thyroglossal duct cysts venous hamangiomas, retropharyngeal abscess and lipomata They should be completely excised

Fistulae are frequently bilateral They open internally in the suprasternal fossa and externally along the anterior border of the sternomastoid They may be demonstrated by probing or the injection of dye They may be familial and inherited They seem to be inherited through the mother only They should be completely excised

FRANK B BERRY MD

EYE

Duke Elder W S and Duke Elder P M Some Physicochemical Factors Influencing the Intra Ocular Pressure Experiments on the Perfused Eye *Brit J Ophth* 1929 xii 385

The authors have succeeded in isolating the head of an animal and connecting the carotid arteries with a perfusing apparatus in such a way as to aerate the blood and simulate the heart beat From experiments on perfused eyes they conclude

- 1 The intra ocular pressure falls with an increase in concentration of either crystalloids or colloids of the blood and also apparently with slight acidification of the blood

- 2 The intra-ocular pressure rises with a decrease in concentration of either crystalloids or colloids and also apparently with slight alkalosis

THOMAS D ALLEN MD

Gifford S R Some Non Surgical Aids in the Treatment of Glaucoma *Brit J Ophth* 1929, xii 48r

Despite the title of this article the author states that nearly all cases of glaucoma will sooner or later require surgical intervention, and that he has seen more poor results from the postponement of surgery than from unsuccessful operation Miotics should be tried first and their effect noted The great danger in their use is overconfidence in their effect With the exception of the so called vasoneurotic diathesis and the related condition of bronchial asthma, the author knows of no other general conditions which have an etiological relationship to glaucoma Cutting down of the field should not be considered a contra indication to operation The danger of loss of central vision after operation may be lessened by reducing the tension to normal before operating and decreasing the time during which the anterior chamber remains empty following the operation

Among the newer methods of reducing tension is the use of adrenalin or glaukosan This treatment gives the best results in simple glaucoma Amino glaukosan derived from ergot reduces the size of the pupil quickly in acute glaucoma The injection of sodium chloride intravenously has also given good results Gynergen or ergotamine is used in glaucoma because of its effect on the sympathetic system Calcium chloride given internally decreases the permeability of the capillaries and increases the effect of adrenalin

VIGIL WESCOTT MD

Vail D T Jr The Oculoglandular Form of Tularaemia *Arch Ophth* 1929 ii 416

The author's father was the first to recognize the human form of tularaemia Vail reviews the history of the disease since its recognition describes its symptoms and signs and discusses its differential diagnosis from Parinaud's conjunctivitis leptothrix conjunctivitis tuberculosis and syphilis of the conjunctiva Pascheff's conjunctivitis conjunctivitis pseudo-tubercle rodentium, sporotrichosis of the conjunctiva and agricultural conjunctivitis

THOMAS D ALLEN MD

Motto M P and Rowen E H Tuberculous Dacryo Adenitis *Am J Ophth* 1929 xii 818

The authors report a case of tuberculous dacryo adenitis in an eight year-old colored boy Following measles and whooping cough the patient was found to be suffering from tuberculosis of the spine and developed also two fluctuating swellings one on the

Dr William H Richardson Richardson was severely wounded in the first fire and his life was saved, so the story goes, by the prompt surgical intervention of his antagonist, Dudley Dudley and Richardson later became lifelong friends

H C Handerson¹ says of Dudley

¹ Translator and commentator Baas "Outlines of History of Medicine" New York 1889

He was to the United States west of the Allegheny Mountains what Valentine Mott was to the east—*facile princeps* In 1828 he trephined the skull for the relief of epilepsy probably the first operation of this nature performed in the United States.

His death occurred January 20, 1850 the result of apoplexy

ceding ear disease. The process seemed to have developed in the region of the asterion, and was in sidious symptomless and destructive. It was operated upon successfully.

GEORGE R. McQUEEN, M.D.

Vlasto M. The Chorda Tympani Nerve in Otology
Proc Roy Soc Med Lond 1929 xvi 1568

The author gives a brief resume of the anatomy of the chorda tympani nerve and discusses the effect of common otological procedures on this nerve. He states that because of its vulnerable position it is frequently involved in attic suppuration.

The test commonly used to establish the function of the chorda tympani is the determination of the patient's ability to recognize taste on the anterior two thirds of the tongue. Observations on the sense of taste are tedious and unreliable.

Vlasto reports two cases of ageusia following myringotomy. He states that in ossiculotomy the chorda tympani nerve is unavoidably injured. It is frequently injured also in radical mastoidectomy.

In suppurative disease of the middle ear injury of the chorda tympani occurs most often when the attic is involved. However in many chronic cases it is not affected.

In two cases of suspected injury to the chorda tympani the author found changes in the sub maxillary glands.

W. M. PATON, M.D.

NOSE AND SINUSES

Davis J. L. Middle Nasal Turbinate Abnormality Fundamentally Responsible for Many Common Ills Regarded Usually as of Doubtful or Unknown Origin
Surg Clin N Am, 1929 ix 1273

The author calls attention to the association between abnormalities of the middle turbinate and a wide range of disease processes.

He divides cases of abnormalities of the middle turbinate into three groups. In cases of the first group the abnormalities consist of variations from the normal in size, shape and position. The middle turbinate is rigidly fixed against the lateral nasal wall and the reflexes responsible for the malady are due to the pressure against the sensitized ethmoidal structure.

In cases of the second group there are extensive inflammatory changes in addition to variations from the normal in the shape and position of the turbinate. The degenerative changes involve both the turbinate and the adjoining ethmoid.

In cases of the third group the posterior portion of the middle turbinate impinges rigidly against the posterior septal wall and it appears that the turbinate developed posterior to its usual location.

Among the maladies resulting from the deformities in cases of Group 1 are headache, neuralgia, neuritis, neurasthenia, amnesia, hysteria, dysmenorrhea, tinnitus aurium, vertigo and digestive disturbances. The author believes that there is a close association between headaches and turbinate abnormalities.

In cases in Group 2 the deformities may result in paroxysmal sneezing, disturbance of olfaction, hay fever, and asthma. Degenerative processes with more or less polypoid formation are always present in asthma and hay fever.

In cases of Group 3, oxzena is a common sequela. The article includes illustrations demonstrating the anatomy of the nasal structures at various ages.

W. M. PATON, M.D.

Gardham A. J. Endothelioma of the Nasopharynx. An Infiltrating Tumor at the Base of the Skull
Brit J Surg 1929 xvi 242

Gardham reviews the literature on endotheliomata of the pharynx, describes the signs and symptoms, metastases, microscopic appearance, and treatment of these tumors and reports nine cases, four of which were his own.

The most prominent symptoms in the cases reported were trifacial neuralgia in three, enlargement of the glands of the neck in three, deafness in two and hemorrhage from the pharynx in one.

Sections of the tumors showed carcinoma like characteristics. The neoplasms were composed of large irregular cells mostly spheroidal lying in a stroma rich in connective tissue. There was no evidence of degeneration or the formation of cell nests. Some of the sections showed marked clefts or clear spaces. The cells were commonly arranged as tubules. The typical findings are shown in two photomicrographs.

The clinical appearance of the endothelioma varies. Usually the tumor is small and sessile and lies in the lateral wall of the pharynx in the region of the eustachian orifice. It is pink and firm and in the early stages practically free from ulceration. It has a peculiar tendency to spread widely under the mucous membrane without producing ulceration. This tendency results in wide involvement of the structures at the base of the skull. All of the cranial nerves may be involved and in the terminal stages there may be involvement of the nerves of the jugular fossa. The second and third divisions of the trigeminal nerves are commonly affected. Involvement of the sixth nerve is regarded by some observers as one of the cardinal signs. Direct infiltration of the internal pterygoid and of the levator palati has been reported. Unilateral deafness resulting from obstruction to the lumen of the eustachian tube is an early characteristic sign. Invasion of the cranial cavity may take place early, but its symptoms often develop quite late.

The prognosis is distinctly unfavorable. The best results are obtained from the use of radium tubes.

W. M. PATON, M.D.

Ruskin S. L. The Neurological Aspects of Nasal Sinus Infections, Headaches and Systemic Disturbances of Nasal Ganglion Origin
Arch Otolaryngol 1919 x 337

Many of the manifestations attributed directly to the absorption of toxic products from infected

right elbow and the other on the left upper eyelid. The swelling on the right elbow ruptured. The eye condition was complicated by ulcerative keratitis.

Two operations were done on the eye to remove the scar tissue and correct the deformity. The red mass projecting down from the upper lid which was covered by skin above and conjunctiva below, was excised and an external canthotomy was done. Histological examination revealed tissue characteristic of the lachrymal gland which showed tuberculous.

VIRGIL WESCOTT M.D.

Bengtson I. A. The Epithelial Cell Inclusions of Trachoma. Experimental Studies. *Am J Oph*, 1929 xii 637.

In a bacteriological study of material taken from the eyes in 230 cases of trachoma, Bengtson found inclusion bodies in 45 per cent. In the conjunctiva of guinea pigs she produced the elementary bodies of Iwanazek and the 'inital bodies' of Lindner by the inoculation of certain gram negative rod shaped organisms isolated from the conjunctiva of patients with trachoma. She believes that the inclusions in the epithelial cells originate from rod shaped microorganisms which tend to occur as diplococci and she attributes the development of the inclusion body to the multiplication of this organism and the reaction of the cell.

THOMAS D. ALLEN M.D.

Pillat, A. Does Keratomalacia Exist in Adults? *Irish Ophth*, 1929 ii, 256-399.

Pillat states that keratomalacia is primarily a disease of the integumentum commune with its appendages the skin glands hair and nails. The epithelial cells of the respiratory and digestive tract appear to be affected, and certain other organs of the glandular type i.e., of ectodermal origin such as the lachrymal gland, the sweat and sebaceous glands and probably the liver and the kidney, may undergo changes. The extent to which the glands of internal secretion are concerned is unknown. The pigmentation which appears on the external skin and on the conjunctiva of the eye suggests the presence of disease of the suprarenal gland similar to Addison's disease. The condition is therefore an extensive 'system disease' in the broadest sense of the word, a disease of the greater part of the ectodermal leaf of the body, which is caused by undernourishment and a lack of certain food elements especially Vitamin A. In its mildest forms, this avitaminosis occurs in the eye as xerosis of the bulbar conjunctiva. In its severest form it culminates in keratomalacia with total blindness and when accompanied by bronchopneumonia it results in death. The sum of further research work should be to determine the nature of the initial stages of the general symptoms. It is probable that these may be studied in the mild forms of the disease such as xerosis epithelialis with hemeralopia which is common in Europe and America.

The condition in the eye is a disease of ectodermal elements. This is proved by the disease of the con-

junctiva and corneal epithelium the change of the former to a type of epidermis the pigmentation of the basal cell layer, and the disease of the shagreen of the lens. Hemeralopia is only an expression of the disease of the epithelial elements the rods and cones and of the pigment epithelium of the retina.

THOMAS D. ALLEN M.D.

Roy J. N. A Case of Monocular Blindness of Electrical Origin. *Brit J Ophth*, 1929 xii 490.

A man thirty seven years of age was exposed without protective glasses to a mass of metal under the action of a strong electrical current. The exposure was followed after a few hours by acute conjunctivitis and after a few days by visual disturbances in the right eye.

Examination of the right eye by the author eight months after the exposure revealed a central lesion near the disk, a lesion of the macula lutea narrowing of the arteries, and optic atrophy.

VIRGIL WESCOTT M.D.

EAR

Hett G. S. Wells A. G. and Levick G. N. Ionization in Cases of Suppuration of the Middle Ear. *Proc Roy Soc Med Lond*, 1929 xxi 1561.

HETT characterizes ionization as a valuable adjunct in the treatment of suppuration of the middle ear. He reports that he has found it of value in clearing up a persistent discharge after radical mastoidectomy and that its results in subacute types of otitis media are often remarkable.

WELLS regards ionization as of great value in selected cases. He has obtained the best results with it in certain types of chronic otitis media. He has found that contrary to general belief the perforation need not be large as long as the ionizing fluid reaches all of the septic area. The field should be carefully prepared by syringing and the removal of all debris.

LEVICK describes the technique of ionization in suppuration of the middle ear. The active electrode consists of a vulcanite aural speculum with a fixed coil of zinc wire on its inner surface. This is introduced into the meatus of the ear and the negative electrode attached to some other part of the body. After careful irrigation the meatus is filled with a 2 per cent aqueous solution of zinc sulphate and the positive electrode inserted. The current should be introduced gently. The strength of the current used varies from 0.2 to 1 ma.

W. M. PATON M.D.

Grove W. E. Primary Cholesteatoma of the Temporal Bone. *Arch Otolaryngol*, 1929 x 398.

It was formerly thought that a cholesteatoma developed only after rupture of a drum membrane and invasion of the middle ear by epithelium but it is now known that such a tumor may occur in other parts of the skull without the previous rupture of a drum.

The author reports a case of histologically proved cholesteatoma in the temporal bone without pre-

radium irradiation of the cervical region should then be done. Larger cancers, even if readily accessible to excision may on occasion be treated by the insertion of radium needles or radium tubes either without excision or immediately following excision with the diathermy knife. It has not yet been determined whether preliminary excision improves the prognosis or renders it less favorable. At any rate the cervical region should be irradiated.

Lingual cancers which because of their size or close proximity to the mandible are not accessible to a radical procedure should be coagulated and then treated with radium. Cancers located in the base of the tongue may sometimes be caused to disappear by the deep insertion of radium tubes. Lingual cancers infiltrating the floor of the mouth are nearly always incurable. They are best influenced by a combination of diathermy excision and radium treatment but recur in a very short time. Hard lymph glands in the neck which are readily palpated but still movable necessitate very radical removal. This is best done by the method of Crile—excision of the entire cellular mass in the neck together with the sternocleidomastoid muscle, the entire internal jugular vein from the mastoid process down to the clavicle and all of the contents of the submaxillary and submental regions including the lymph and salivary glands. This operation is usually limited to one side but is sometimes done bilaterally and is then performed in two stages. In sixteen such operations five of which were bilateral, the authors had one fatality.

The immediate and end results of the treatment of carcinoma of the tongue by surgery and irradiation are collected from the world literature and presented in two tables.

The authors have treated thirty-four cases with radium emanation needles and radium element

tubes. In twenty, immediate disappearance of the tumor was accomplished. In ten cases which were traced the patient remained free from recurrence for from six to sixteen months.

The most important factor in the present day treatment of cancer of the tongue is early diagnosis. When the cervical glands have become involved the chance of permanent cure is very slight.

V. Petrov (Z)

NECK

Richter H M. Thyroidectomy Surg, Gynec & Obst, 1929 xlix, 67.

In describing his method of performing thyroidectomy the author states that the use of iodine in the treatment of thyrotoxicosis has materially influenced the anteoperative and postoperative reactions as well as the mortality rate. He reviews a series of 500 cases with 1 death.

Richter employs local infiltration anesthesia supplemented by nitrous oxide oxygen. He separates the prethyroid muscles in the midline through a transverse incision. When unusual exposure is required he does not hesitate to divide the strap muscles. The gland is delivered by the use of sharp retractors hooked into the gland which have been found of greater aid than forceps. After ligation and division of the superior thyroid vessels on each side the isthmus is divided with care not to injure the trachea beneath. This procedure makes it possible to elevate each lobe and to perform a subtotal thyroidectomy safely under direct vision.

The author emphasizes the importance of removing as much gland as possible in the treatment of thyrotoxicosis. In most cases he sews up the wound without drainage. J. W. H. GARLOCK M D

sinuses are not due to that cause primarily but are the result of nerve irritation from the inflamed sinus membrane. These neurogenic disturbances can be grouped as acute pains in sinus inflammation, chronic neuralgias, functional vasomotor and secretory states and systemic effects induced chiefly through the trigeminal, facial and vegetative systems.

The clinical picture of involvement of the trigeminal nerve may be direct as in ophthalmic migraine secondary to irritation of the ethmoid nerves, or indirect from the nasal ganglion. In the facial system irritation may be transmitted from the nasal ganglion through the greater superficial petrosal nerve. In the vegetative system reflexes occur between the sympathetics of the nasal ganglion and the nerves supplying the thoracic, lumbar, and sacral regions.

On the basis of these facts nerve blocking of the nasal ganglion is a rational treatment for non suppurative sinus disturbances.

GEORGE R. McCLURE M.D.

Thomson E. S. Conditions of the Optic Nerve Caused by Disease of the Sinuses. *Arch Otolaryngol* 1929 x 248

The author believes that sinus disease is responsible for a considerable proportion of the cases of retrobulbar neuritis, plastic neuritis, and a form characterized by sudden functional depression with no change in the appearance of the optic nerve. The neuritis is the result of direct infection from the sinuses, usually the ethmoids and sphenoids and is not toxic. The treatment indicated in the majority of cases is thorough operation on the sinuses. If the operation is performed early enough the results are uniformly good. MANFORD R. WALTZ M.D.

Seecof D. P. Vincent's Organisms in Chronic Sinusitis, Osteomyelitis of the Frontal Bone, Orbital Cellulitis, Meningitis and Pulmonary Gangrene. Report of a Case. *Arch Otolaryngol* 1929 x 384

The author reports a fatal case of Vincent's angina which apparently had its origin in the throat and spread to the sinuses, meninges and brain. Autopsy revealed chronic infection of the frontal ethmoid, and sphenoidal sinuses, osteomyelitis of the frontal bone, cellulitis of the left orbit, localized meningitis and pulmonary gangrene. In all of these locations the Vincent organisms were associated with other bacteria. Seecof attributes the intracranial lesions to spread of the infection of the sinuses through the diploe of the frontal bone and the pulmonary lesion to the aspiration of pus from the throat.

GEORGE R. McCLURE M.D.

Barwell H. The Present Treatment of Inflammation in the Maxillary Antrum and Frontal Sinus. *Proc Roy Soc Med Lond* 1929 xxxi 1423

The author states that in the treatment of maxillary and frontal sinus infections the object is to ob-

tain unimpeded drainage (usually permanent) of the affected cavity into the nose. The operation recommended for the average antrum infection which does not respond to two or three tapings is the formation of a large intranasal opening without sacrifice of the anterior end of the inferior turbinate. Very severe cases with a foul discharge are operated upon through the canine fossa. The author believes that in neither operation is removal of all of the naso-antral ridge as important as some surgeons think. Acute frontal sinus infection is rarely operated upon by the external route, but when necessary, the author removes the entire floor of the sinus together with the anterior ethmoid cells instead of performing a Killian operation and does not pack.

MANFORD R. WALTZ M.D.

Skilern R. H. Chronic Ethmoiditis. Its Conservative Surgical Treatment. *Ann Otol Rhinol & Laryngol* 1929 xxxviii 716

The basic principles of the treatment of ethmoiditis are aeration and drainage. In simple catarrhal infections, the swollen and often infected middle turbinate is removed and after five days use is made of tampons of a 10 to 20 per cent solution of a non-irritating silver preparation in half water and half glycerine.

In the purulent infections confined to single cells of either the anterior or the posterior group, aeration is obtained by complete removal of the middle turbinate and opening of the individual cells by means of a hook and Gruenwald forceps.

In suppuration of the entire labyrinth, complete exenteration of the labyrinth followed by tampons wet with a silver preparation is necessary for a permanent result.

The treatment of the hyperplastic types of ethmoiditis consists essentially in as complete removal as possible of the hyperplastic tissue and the underlying bony attachment. MANFORD R. WALTZ M.D.

MOUTH

Petrov N. and Kuzmina E. The Treatment of Carcinoma of the Tongue (Die Behandlung des Zungenkarzinoms). *Leitnik Chir* 1923 xiii 23

The authors estimate that in Russia cancer of the tongue is responsible for 3,000 deaths yearly. In a period of one and a half years at the Oncological Institute in Leningrad they saw forty-one cases.

The treatment is divided into operative procedures with the knife, fulguration by means of a diathermy apparatus and roentgen or radium irradiation. It must be planned according to the site and extent of the tumor in the tongue and the lymph glands in the neck. When the carcinoma is very small and a simple exploratory excision to secure a specimen for histological examination would be equivalent to cutting out almost all of the tumor, the nodule should be excised with the knife, the excision being made in healthy tissue at a distance of at least 1 1/4 cm. from the lesion and prophylactic roentgen or

differentiate two entirely independent processes—an inflammatory process in the abdominal cavity and a toxic process in the cauda equina. The second process is prevented by division of the vagus nerves the entire danger of the peritonitis being thereby diminished.

Experiments were carried out on rabbits also with regard to tuberculous infection. At first poisoning of one vagus nerve with carbolic acid, tuberculin, or scarlet fever toxin was followed by aspiration of the spinal fluid to increase the intoxication of the vagus nucleus in the medulla oblongata. This was followed by subcutaneous or intravenous infection with a weak culture of tubercle bacilli. The result was a more marked involvement of the lung on the side of the vagus injury, which was later followed by involvement of the lung on the other side. The pulmonary tuberculosis in the animals so treated was always more pronounced than that in the untreated controls. From these experiments the author concludes that the local sensitivity of the organism to tuberculosis may be increased by injuries in the central nervous system without local injury.

Finally the author in association with Ponomarev and Pigalev carried out experiments on rabbits with regard to cancer. Local painting of the ears with tar was followed by the aspiration of the spinal fluid from the subarachnoid space. In addition injections of thin tar emulsions were made into the subarachnoid space suboccipitally. An acceleration of the precarcinomatous changes (keratosis and papilloma formation) was noted. The author believes that an injury of the corresponding center in the brain is necessary for the cancerization of the epithelial cell in the living organism and that this injury should be considered the primary factor disturbing the nervous regulation of the normal life of the cells and thereby giving rise to malignant uncoordinated growth.

As the chief result of the investigation which was made with hundreds of experiments the author gives it as his impression that the nervous system is involved in all local and general pathological processes and very often organizes them itself. He concludes that the nervous system plays a much more important rôle in the pathology of infection and immunity than is generally assumed.

N. PETRO (2)

Leavitt F H. Brain Tumors in Childhood. A Clinicopathologic Study. *Am J M Sc* 1929 clxxviii, 229

Brain tumors occur with relative frequency in infancy and childhood.

Of 350 verified brain tumors examined on the services of the Philadelphia Children's University, Episcopal and Orthopedic Hospitals Philadelphia 23 occurred in children and of these 23, 15 were cerebellar gliomata.

In most cases of brain tumor in children there is a history of a rather rapid onset of vomiting and head

ache soon followed by drowsiness and signs of increasing intracranial pressure indicated by rapidly developing papilledema with retinal hemorrhages disturbance of the gait enlargement of the head and McEwan's "cracked pot" sign in infants and the localizing symptoms of the growth which may be determined by careful neurological examination.

The author emphasizes the importance of earlier recognition of cerebral neoplasms in children with obscure head symptoms.

The distressing symptoms may be cured or at least alleviated by surgical and electrotherapeutic measures.

The usual types of tumors encountered are the tuberculomata, the congenital tumors and tumors of the glioma group. Statistics of recent date compared with those of twenty years ago show a decrease in the frequency of tuberculous growths. In the 350 cases reviewed there were only 2 tuberculomata. These occurred in children. The congenital tumors (adenomata) are generally suprasellar lesions and produce symptoms of dyspituitarism. The glioma group, particularly medulloblastomata, spongioblastomata and astrocytomata constitute about 75 per cent of the new growths in pre-adolescent brains and 40 per cent of all brain tumors. In childhood they usually occur in the midcerebellar region arising from the roof of the fourth ventricle and projecting into the vermis. In this situation they are in the most critical position to endanger life and produce an early internal hydrocephalus by pressure on the iter. Numerous cases reported in the literature in which apparently idiopathic hydrocephalus developed were found at autopsy to be cases of microscopic gliomata occluding the iter. The meningiomata, acoustic tumors, and endotheliomata so common in adult life are quite uncommon in childhood.

The fetal test theory of the genesis of neoplastic growths is supported by the identical occurrence of cerebellar tumors in monozygotic twins.

ARTHUR H. HOLCK, M.D.

Bailey P. and Bucy P. C. Oligodendrogliomata of the Brain. *J. Path. & Bacteriol.*, 1929 xxxii, 735

The authors trace the discovery of the oligodendroglioma as cells of the normal nervous system as well as cells forming glomatous tumors. They discuss the normal and pathological characteristics of these cells the methods by which they are stained and their relation to astrocytes neuroglia, and other cells. They then report four cases of oligodendroglioma in detail and present data concerning nine others.

Oligodendroglioma tumors have thus far been found only in the cerebral hemisphere but may occur in any part of the central nervous system. They develop most frequently in adults, but have been found also in children. They grow very slowly, the average duration of the symptoms at the time operation is performed is fifty seven and a half months. They are relatively benign, the average survival after operation being thirty nine and two tenths months.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Speranskij A. The Mechanism of Segmental Brain Affections and Their Importance in the Pathogenesis of Certain General and Local Processes (Ueber den Mechanismus der segmentären Gehirnaaffektionen und dessen Bedeutung in der Pathogenese einiger allgemeiner und lokaler Prozesse) *Vestnik Chir.* 1929 xvi, 21

This article reports a large number of experiments carried out by the author and his co-workers on animals to determine more exactly the part played by the central nervous system in different processes running a local course. In previous investigations the author demonstrated that the fluid ('lymph') in the peripheral nerve trunks empties into the cerebrospinal fluid and that the afferent flow of the nerve 'lymph' to the arachnoid sac can be considerably accelerated by lowering the pressure of the spinal fluid (by repeated aspiration) or by raising the pressure at the periphery, in the musculature where most of the nerve end apparatus are located.

When for example a 10 per cent emulsion of the fixed virus of rabies is injected in amounts of 30 c.c.m. into the musculature of dogs, the dogs will remain healthy but if after the injection of the virus repeated suboccipital aspirations of the spinal fluid are done, about two-thirds of the dogs subjected to the injections will become afflicted with rabies. If equal amounts of tetanus toxin are injected into the musculature of the legs of two dogs and one dog remains lying on the floor of a low cage while the other draws around for a few hours a small wagon loaded with stones the second dog will become affected with tetanus much earlier and roars severely than the first dog. If equal amounts of a carmine emulsion are injected into the triceps muscle of the leg of a dog on both sides and one of the legs is kept at rest while the other is subjected to electrical stimulation for hours (increased pressure at the periphery) the entire sciatic nerve on the stimulated side up to the spinal cord will be stained whereas on the unstimulated side the stain will be found along the nerve for only a short distance. The nerve trunks have an affinity for various substances, which therefore reach the central nervous system directly. If for example solutions of atoxic salts (such as sodium phosphate buffer solutions) are injected intravenously into dogs or rabbits no signs of intoxication are observed but if even smaller amounts of the same solutions are injected into the muscles which derive their innervation from the cauda equina the animals will develop very pronounced symptoms of illness such as dyspnoea, muscle contraction trembling and salivation. Subdural injections of these substances lead to severe spasms and death.

Various and numerous experiments have led the author to conclude that all toxic infections (scarlet fever, diphtheria, tetanus and dysentery) injure the central nervous system primarily and that all peripheral disease foci are to be considered secondary manifestations of these nerve injuries.

The fact that the action of antitoxins is better following their intramuscular injection than following their subcutaneous injection is explained by the author by the assumption that in the musculature a higher internal pressure prevails and therefore the injected substances penetrate into the nerve trunks sooner and are transported in them to the nervous system. He suggests that in severe cases of diphtheria it may perhaps be advantageous to inject the antitoxin not only intravenously but also into the muscles of the face and neck as the nerve tracts of these muscles (the temporals, masseters, pterygoids and sternomastoids) lead to the vicinity of the vital portion of the central nervous system of the medulla oblongata.

Experiments on dogs carried out by Vanevsky one of the author's co-workers demonstrated the nervous origin of local ulcers. Vanevsky was able to produce ulcers on the paws of both legs in symmetrical locations by infecting the divided sciatic nerve and subsequently aspirating the cerebrospinal fluid. Accordingly the basis of such 'trophic' ulcers is a segmental injury of the spinal cord.

In a similar way it has been possible for the author in collaboration with Manenkov to produce so-called 'sympathetic inflammations' of the eyes in dogs. Small particles of non sterile copper wire were introduced into the anterior chamber of one eye and thereafter from 10 to 20 c.c.m. of spinal fluid were aspirated in the region of the back of the neck every second or third day in order to accelerate the afferent flow of the toxic fluids along the nerve tracts to the brain. The animals developed endocyclitis and panophthalmitis in the injured eye and after from five to fifteen days the other eye also became involved, although first a pericorneal injection and then diffuse clouding of the cornea.

With Busmaking, Pigalev, and Manenkov the author was able to demonstrate also a very distinct relationship between suppurative peritonitis and the central nervous system. The experiments were carried out on rabbits with a definite strain of streptococcus. From 1/20 to 1/30 c.c.m. of a pure culture killed every animal in from ten to twenty hours after its intraperitoneal inoculation. Other rabbits which were prepared by division of both vagus nerves below the diaphragm proved more resistant to the streptococcus infection of the peritoneal cavity in spite of their poor general resistance than normal rabbits. Therefore in peritonitis we must

gomychia meningovascular syphilis of the cord adhesive arachnoiditis amyotrophic lateral sclerosis Hodgkin's disease of the cord multiple myeloma aneurism of the aorta pachymeningitis hypertrophica cervicalis cervical rib Pott's disease hypertrophic arthritis and spondylitis and vascular lues

Cauda equina tumors are briefly discussed, the author stating that their symptoms are essentially those of peripheral nerve involvement

DAVID J. IMBASTATO M.D.

Alajouanine and Pettit Duatillis. Compression of the Cauda Equina by a Tumor of an Intervertebral Disc. Removal Followed by Recovery (Compression de la queue de cheval par une tumeur d'un disque intervertébral: ablation suivie de guérison) *Bull. et mém. Soc. nat. de chir.* 1929 lv 937

The patient whose case is reported was a man of thirty-seven years who came for treatment for sciatica. About four years previously he had been confined to bed with pain in the lumbosacral region and in the region of the left leg which is supplied by the sciatic nerve. He attributed this attack to the lifting of heavy weights. A few months later the sciatica recurred and persisted for several weeks. Since then he had had more or less permanent lumbosacral pain, with acute exacerbations. He had suffered almost continuous pain for a year and his spinal column had become rigid. During the past few months he had limped and his left leg had been weak. The pain stopped when he lay down but began again when he stood up for a few minutes.

Examination revealed contracture of the lumbosacral muscles on the left side and slight scoliosis of the lumbar column. When the trunk was flexed the lumbar segment remained rigid and there was marked flexion of the lower limbs. Percussion of the spinous processes caused moderate pain over the fifth lumbar vertebra. On the right side the tendon reflexes were normal but on the left the Achilles tendon and plantar reflexes were abolished and the patellar reflex was decreased. Painful points were found along the sciatic nerve and Lasgue's sign was observed. Anesthesia for touch, pin pricks and heat was present in the region of the sacral roots and up to the third lumbar vertebra. The patient complained of a feeling of weight in the feet, painful coldness of the leg with slight disturbance of the sphincters and decreased genital function in short the syndrome of a lesion of half of the cauda equina.

Lumbar puncture withdrew a clear fluid containing 0.50 gm. of albumin and two cells per cubic millimeter and having a negative colloidal reaction and Wassermann reaction. The roentgenogram showed no lesions of the bodies of the vertebrae or the laminae and no spina bifida occulta but revealed lumbarization of the first sacral vertebra, a lumbar costiform process on the right side and another such process twice as large on the left side which seemed to be

continuous with the wing of the sacrum with which it articulated. A first test with lipiodol was negative but when a second test was made the lipiodol stopped at the lower border of the fifth lumbar vertebra to the left of the midline and the arrest persisted for three days.

As the authors did not believe that the vertebral malformation could be responsible for the signs of injury of the cauda equina they made a diagnosis of tumor pressing on the cauda equina and performed a laminectomy of the fourth and fifth lumbar and first sacral vertebrae. A small tumor was found on the intervertebral disk between the fifth lumbar and first sacral vertebrae. This was removed. Histological examination showed it to be fibroid with no fibroblasts and no trace of neoplastic or inflammatory growth. It was possibly not a true tumor but only a malformation of the disk.

The patient recovered rapidly, and the signs of compression of the cauda equina disappeared.

ROBINEAU, who read this report to the Society described two similar cases of his own criticized some points in the procedure of Alajouanine and Pettit Duatillis and discussed some of the details of the technique of lipiodol examination.

AUDREY G. MORGAN M.D.

Owen H. R. and Fay T. Chordotomy for Gastric Crises Complicated by Acute Intestinal Obstruction. *Ann. Surg.* 1929 xc 434.

The chordotomy in the case reported by the authors was performed under local anesthesia with the neurologist standing by to determine the extent of analgesia produced as the knife cut successively deeper into the cord in the region of the antero-lateral columns. Analgesia with partial therm-anesthesia was obtained on the right side of the body as high as the nipple line and on the left side as far as the hip. The area of anesthesia rose higher as the incision into the cord was deepened and it appeared that the pain and temperature senses were represented by separate pathways in the cord.

After a month's freedom from pain the patient developed intestinal obstruction. For this condition an exploratory laparotomy was done on the right side. Anesthesia was unnecessary. Manipulation and opening of the parietal peritoneum gave rise to no pain, whereas the visceral peritoneum was painful. From this evidence it is concluded that pain fibers to the visceral peritoneum arise either bilaterally in the cord or unilaterally in a segment above the third thoracic.

KNUT H. HOLCK M.D.

PERIPHERAL NERVES

Gurevic N. Disease of the Peripheral Nerve Trunks in Endarteritis Obliterans (Zur Frage der Erkrankung der peripherischen Nervenstämmе bei obliterierender Endarteritis) *Med. Mysl.* 1928 v 45.

In all of seven extremities which had been amputated on account of endarteritis obliterans the

The tumors are almost invariably calcified and are easily visualized in roentgenograms especially when the Potter Bucky diaphragm is used

DAVID J IMPASTATO M D

Dock G Sluder's Nasal Ganglion Syndrome and Its Relation to Internal Medicine *J Am Med Ass* 1929 xciii 750

Because of the varying nature of the Sluder syndrome patients with this syndrome often apply for treatment first to the internist or general practitioner. The condition has two main forms the neuralgic and the sympathetic. In the former there is pain or paresthesia in various parts of the face and head and sometimes in the neck and shoulders. In the latter the manifestations are usually rhinorrhea coryza sneezing nasal obstruction swelling and irritation of the mucous membranes swelling of the eyelids and photophobia. In some cases the condition suggests non seasonal hay fever or even asthma. All of the symptoms yield to canalization of the nasal ganglion. The patients are frequently neurotic, but as a rule present none of the stigmata of hysteria.

The article is concluded with a consideration of the anatomy and pathological processes in the ganglion both proved and speculative.

LEO M DAVIDOFF M D

SPINAL CORD AND ITS COVERINGS

Forgue E and Laur G Anatomical Details of the Relations of the Nerve Roots in the Lumbosacral Subarachnoid Space (Quelques précisions anatomiques concernant les rapports des racines nerveuses dans l'espace sous arachnoïdien lombosacré) *Presse méd* Par 1929 xxxvii 895

It is important in lumbar puncture and the induction of spinal anesthesia to know the segmental topography of the nerves of the cauda equina with relation to the walls of the arachnoid-dural space. This is best demonstrated by successive transverse sections of the lumbodorsal cord. The authors include photographs of such sections in their article.

The sections show that the nerves of the cauda equina are arranged in two planes, one on each side which pass out from each other obliquely in a fan shape as they run from their origin to the foramina through which the nerves make their exit from the canal. The two planes of roots form the lateral boundaries of an anterior space that in the lumbar segment of the cord is filled only with spinal fluid. Accordingly, in the lumbar segment, and particularly at the level of the fourth lumbar space a needle introduced exactly in the midline will enter this space without injuring any of the roots. There are doubtless individual variations and the curvature of the body in lumbar puncture tends to bring the two laminae closer together but if a good technique is employed the needle being introduced exactly in the midline lumbar puncture is usually safe in the fourth third and second lumbar spaces.

ANDREW G MORGAN M D

MacGregor D A The Diagnosis of Tumors of the Spinal Cord *West Virginia M J*, 1929 xiv 312

Spinal cord tumors are relatively rare. They constitute only from 1½ to 2 per cent of all neoplastic lesions. According to Frazier, an average time of two and two-fifths years elapses before a definite diagnosis is made. Such tumors may occur at any age and may be divided into

1 The extradural or paravertebral tumors, lying outside the spinal dura mater

2 The intradural, extramedullary tumors lying within the dura mater but outside the substance of the cord

3 The intradural, intramedullary tumors lying within the substance of the cord

The intradural, extramedullary group which constitutes about 70 per cent of all cord tumors, are the most amenable to surgery and offer the best prognosis. The extradural and intradural intramedullary tumors have an incidence of 15 per cent each and offer a less favorable prognosis.

In the diagnosis of spinal cord tumor the anamnesis is of first importance. To help in its interpretation the course of spinal cord tumors is divided into three stages namely (1) the irritative stage (2) the stage of beginning compression and (3) the stage of marked compression. It is in the irritative stage which is the longest that the symptoms are most often misinterpreted. The symptoms in this stage depend on the location of the lesion. Pain is not a constant symptom of cord tumors. A tumor situated anteriorly will cause symptoms of anterior root irritation but no pain. In the other stages of the development of spinal cord tumors gross sensory and motor manifestations appear and the diagnosis is made more easily.

When the history and sequence of events indicate a focal spinal cord lesion causing compression exact localization of the lesion becomes imperative. Localization is aided by the following procedures:

1 The neurological examination. This still remains the most valuable method. Fay's method of localization by observation of vasomotor and pilomotor phenomena may be of considerable value.

2 Lumbar puncture and manometric studies of the cerebrospinal fluid pressure.

3 Ayer's combined cisternal and lumbar puncture.

4 Visualization by means of (a) Dandy's air method and (b) hypodol or campidol.

5 Exploratory laminectomy.

6 Laboratory aids examination of the spinal fluid and urine roentgenograms of the spine studies of the blood chemistry and serum and microscopy.

Two aspects of the differential diagnosis are reviewed the differentiation of the three varieties of spinal cord tumors and the differential diagnosis of spinal cord tumors from other conditions. In the early stages of cord tumor the conditions to be ruled out are peripheral lesions such as neuritis neuralgia, sciatica, lumbago and myositis and in the later stages multiple sclerosis transverse myelitis syn-

MISCELLANEOUS

Penfold W J and Price C A E The Refractive Index of the Cerebrospinal Fluid *Med J Australia* 1929 11 424

The authors state that the determination of the refractive index of the cerebrospinal fluid seems to offer definite possibilities in the diagnosis of certain diseases To test its value they examined a series of normal and diseased fluids using a Zeiss dipping refractometer with an accessory prism for the examination of very small quantities of fluid The observations were made at a temperature of 17.5 degrees C in a water bath and were always read by day light

In normal adult spinal fluid the average reading was found to be 1.33510 and there was much less variation between high and low limits than is shown

by other body fluids The average reading for seven children was 1.33508 A marked rise in protein concentration is associated with a rise in the index, while a moderate rise may not be associated with a rise in the index because of the compensating effect of an accompanying fall in the chlorides

Deviations of more than 0.00008 above or below the normal average index should be regarded as pathological A definite rise in the index was found in cases of uraemia and diabetic coma Meningitis was usually but not invariably, associated with a high index In cases of intracranial tumors the index was normal or raised In cases of encephalitis and anterior poliomyelitis it was practically normal Spinal block was easily detected by comparing the indices of cisternal and lumbar fluids The use of the index as a check on the chemical analysis of the fluid is discussed

ALBERT S CRAWFORD M D

author found changes in the walls of the blood vessels supplying the nerves. In every specimen all stages of the obliterating process were to be noted. In the large vessels the obliterated lumen was often penetrated by new vessels which not infrequently were also involved by the pathological process.

In the epineurium there was an exuberant growth of the vessels, some of which were pathologically changed. In some places there was a marked proliferation of connective tissue.

The obliterating process was not equally developed in the blood vessels and the surrounding tissues in all cases. When the blood vessels were injured most the clinical picture was that of a marked nervous affection.

The author studied twelve cases of sciatica. In five there were definite symptoms of endarteritis obliterans but in three only weaker pulsation of the dorsalis pedis artery on the affected side was demonstrable and in four there was no indication of endarteritis obliterans. Therefore it must be borne in mind that in certain cases of disease of the peripheral nerve trunks the underlying condition is endarteritis obliterans. These cases should be classified separately.

L. BANNER VOIGT (Z)

Rose G. The Observation of Ganglion Cells in a Neurinoma of a Peripheral Nerve (Ueber die Beobachtung von Ganglienzellen in einem Neurinom eines peripheren Nerven). *Deutsche Zeitschr. f. Chir.*, 1929, CCXV, 409.

In the case of a fifty eight year-old patient the author removed a neurinoma of the median brachial cutaneous nerve which had developed in the course of the previous year. Besides the usual well known cells, the tumor contained others which had the appearance of fully developed ganglion cells. This was surprising as ganglion cells in neurinomata usually occur only at sites where they are normally present. In the tumor described they must have been newly formed where they were found. The author advances no theory as to their formation.

W. NISSEL (?)

SYMPATHETIC NERVES

Kiss F. and Ballon H. G. The Coeliac Plexus and Its Branches. *Arch. Surg.* 1929, LIX, 399.

In describing the coeliac plexus from the standpoint of modern surgery the authors discuss the roots, branches and microscopic structure of the coeliac ganglia and the plexus of nerves going to the various abdominal organs. Attention is called to the descriptions and illustrations of the pancreatic and duodenal plexuses which have never before been illustrated. In microscopic study the same types of fibers are found in the splanchnic vagi and branches of the coeliac plexus viz non medullated (sympathetic fibers) thinly medullated (sensory fibers in the splanchnic parasympathetic in the vagi) and solitary fibers with thick medullary sheaths (motor fibers). It is most important to the surgeon to know that the sensory fibers to the coeliac

plexus run in the splanchnic nerves. Fewer medullated fibers are found in the hepatic and renal plexuses than in the branches of the superior and inferior mesenteric plexuses.

A block anesthesia of the splanchnic nerves on both sides gives the same result as infiltration of the coeliac ganglia with their uniting branches. Such anesthesia can be obtained with a single injection because the nerves and ganglia lie in loose retroperitoneal tissue.

Since the rich hepatic and pancreatic plexuses lie in the field of many surgical procedures important fibers may be easily damaged.

Because of the intimate relationship of the various plexuses to one another and to the centrally placed coeliac plexus certain lesions involving individual plexuses such as the hepatic or the pancreatic may have their signs and symptoms referred to other organs. Certain disturbances referable to the duodenum and pancreas after operations on the gall bladder may be explained on this basis.

KNOTT H. HORCK MD

Leriche R. and Fontaine R. Some New Facts Regarding the Normal Anatomy of the Sympathetic Based on the Histological Examination of Forty Operative Specimens (Quelques faits nouveaux touchant l'anatomie normale du sympathique basés sur l'examen histologique de quarante pièces opératoires). *Presse méd. Par.*, 1929, XLVII, 905.

Twelve of the specimens described in this article came from the intermediate ganglion, thirteen from the cervical chain, eight from the lumbar chain, four from the pre-aortic chain and three from the presacral chain. Jonnesco claimed that the intermediate ganglion which is interposed between the middle cervical and stellate ganglia is only an enlargement of the nerve trunk and not a true ganglion but in all of their twelve cases the authors found it to be a typical ganglion containing many ganglion cells with a microscopic structure just like that of the superior cervical and stellate ganglia. Moreover, throughout the different nerve trunks they found true ganglion cells either in groups or scattered. Accordingly, the sympathetic chain is not formed of twenty-two ganglia (three cervical, eleven thoracic, four lumbar and four sacral) and twenty-nine internodal branches but is really a continuous ganglion. The sympathetic nerves of the abdominal plexus all contain ganglion cells in varying numbers and sometimes even little ganglia that are visible macroscopically.

These facts are of importance not only anatomically but also physiologically. Langley based his theory of avian reflexes on the fact that bladder reflexes are preserved even when the inferior mesenteric ganglion is painted with nicotine which suppresses its function. This argument is no longer valid since as the reflex may be produced by ganglion cells in the course of the nerve it is a true ganglion reflex.

ADREY G. MORGAN MD

place principally in normal bronchi and the spasm and contraction occur only in normal bronchi. In pathological bronchi neither bleeding nor the in-jec-tion of lipiodol brings about atelectatic collapse.

Coke C. H. Massive Atelectasis. *N. England J. Med.* 1929 ccl 867

Massive atelectasis was first described by Pasteur in 1890 but its cause is still unknown. It is associated with a markedly increased negative intrapleural pressure, whereas in pneumothorax the intrapleural pressure is positive. In massive atelectasis the lung does not leave the chest wall although its volume is lessened by elevation of the diaphragm and sinking and retraction of the ribs. The pull is always toward the affected side whereas in pneumothorax the pull is away from the affected side. A ray examination in atelectasis shows a homogeneous density resembling that seen in pneumonia.

Massive atelectasis has been found as a complication of pneumonia, diaphragmatic pleurisy, acute pulmonary abscess, purulent bronchitis, acute meningitis, acute poliomyelitis, aneurism of the arch of the aorta, and carcinoma of the stomach.

The author believes that while bronchial obstruction is probably one of the chief factors in the development of the condition, paralysis of the diaphragm is also of importance. EARLE I. GREENE, M.D.

Bérard L. and Guilleminet M. Hérotic Thoracotomy in Open Empyema in Pulmonary Tuberculosis (La thoracotomie hérotique dans l'empyème ouvert des tuberculeux pulmonaires). *Presse méd.* Par 1929 xxxv 893

When a tuberculous empyema is opened spontaneously by a bronchial perforation or a fistula directly on the skin the only effective treatment is thoracotomy. As a rule especially when the accident occurs in the course of an artificial pneumothorax there is more or less rapid and severe infection of the pleura. Patients with this condition are rarely sent to the surgeon early and are usually weakened by long illness and hectic fever. The wall of the thorax is often infected from fistulae following puncture and the pleural cavity is lined by a shell of lardaceous tissue which is frequently very thick.

The authors have operated on twenty such cases. In the first four which were treated in the year 1922 to 1923 they performed only a paravertebral thoracoplasty (nine to eleven ribs) in a single stage. In the next five which were treated in the period from 1923 to 1925 they tried different methods of drainage and practiced puncture or pleurotomy before the thoracoplasty. In the last eleven cases they performed a progressive operation in several stages always preceded by drainage of the pleura. In this last group there was only one postoperative death. Five typical cases are reported.

Among the twenty cases there were five very good results after periods ranging from a year to six and a half years. In two cases the results were good at first but after several years the disease became

bilateral. In three cases death occurred after periods ranging from a day to a few weeks and in four cases it occurred after several months. Six patients are still under treatment and are doing well.

The authors believe that operation will be successful more frequently when it is performed more often in cases of recent perforation and less often in cases of old open empyema. They state that patients with closed empyema and tuberculosis should be sent to the surgeon as soon as the clinical and the roentgen examination show that medical treatment has failed.

They prefer local anesthesia for the typical operations (thoracoplasties) and general anesthesia induced with kelen for the atypical operations (pleurothoracotomies). AUDREY G. MORGAN, M.D.

ESOPHAGUS AND MEDIASTINUM

Tuffier. Gastro Esophageal Anastomosis with an Intestinal Loop in Strictures of the Esophagus: the Roux Operation. (A propos de l'anastomose gastro-oesophagienne par anse intestinale dans les rétrécissements de l'oesophage: opération de Roux). *Bull et mém. Soc. nat. de chir.* 1929 lv 727

In six cases of esophageal cancer in which Tuffier performed the Roux operation he did not succeed in anastomosing the upper portion of the esophagus and the intestinal loop either because the patient was satisfied with the first operation or because the cachexia of cancer prevented further surgery. In four cases attempts at suture failed and a cervical esophagocutaneous fistula remained.

The first stage of the operation—resection of the small intestine, liberation of the skin up to the neck, anastomosis to the stomach, and the passing of the loop the length of the thorax—is relatively simple but bringing the parts together above is difficult. In the six cases reviewed there were three deaths after the first stage of the operation. Roux recommended his operation not for cancer but for non-cancerous strictures of the esophagus, e.g. cases of cicatricial stenosis in which the patient's resistance is better.

PAGE

Robertson Sir C. and Brown R. E. B. Dermoid Cyst of the Mediastinum. *Brit. J. Surg.* 1929 xvii 197

The authors report the case of a woman who sought treatment for paroxysms of coughing during which she frequently coughed up hairs. At the time of examination she had a temperature of 101 degrees F. and was coughing up yellow granules and hairs. There were no abnormal physical signs in the chest. Roentgenograms showed a rounded, well defined abnormal shadow in the anterior mediastinum to the right of the midline. A diagnosis of infected dermoid cyst was made. Operation was performed in two stages and followed by continuous suction drainage. Aside from superficial infection the patient made a satisfactory recovery and two months later was in good health.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Smith G Van S, and Marks G A Benign Tumors of the Female Breast A Clinical and Pathological Study of 201 Cases Treated Between 1875 and 1928 at the Clinic of the Free Hospital for Women Brookline Massachusetts *Surg Gynec & Obst* 1929 xlii 316

The authors classify benign tumors of the female breast into the following four groups

1 Intriductal fibroma a condition in which there is a distortion of the epithelial elements of the gland by the growth of the connective tissue stroma mainly the periductal tissue

2 Fibrocystadenoma or fibro-adenoma a tumor which is quite similar to the periductal fibroma but is cystic, very often only microscopically, with dilated acini

3 Papillary cystadenoma a tumor with definite cyst formation and proliferation of the epithelial lining into papillae

4 Chronic cystic mastitis

The majority of the authors patients with periductal fibroma were under thirty years of age all of those with fibro adenoma were under thirty five years and most of those with papillary cystadenoma and chronic cystic mastitis were over thirty five years

SAMUEL PERLOW M D

TRACHEA, LUNGS AND PLEURA

Stenström B Carcinoma of the Trachea with Paralysis of the Right Recurrent Laryngeal Nerve (Carcinome parti de la trachée et accom pagné de parésie du nerf récurrent droit) *Acta med Scand* 1929 lxxi 82

The author calls attention to rarity of carcinoma of the trachea reviews the twenty two cases which have been recorded in the literature and reports a case of his own Fifteen of the twenty two patients whose cases are reported in the literature were men The average age was forty five years The usual symptoms were cough sometimes accompanied by hæmoptysis and dyspnoea In two cases there was hoarseness In thirteen the symptoms had been present for a year or less Death was usually due to asphyxia or pneumonia In fifteen cases the tumor was at the level of the bifurcation of the trachea in 3, in the middle portion and in 3, in the upper portion In one case it occupied the whole length of the trachea It was limited to the trachea in only six cases Histologically it was composed of squamous or cylindrical epithelium or both

The author's case was that of man sixty four years of age who, in April 1918 began to have a persistent cough without fever and became hoarse In July, 1918 he began to have pain in the neck and

right shoulder Although he denied syphilis, his Wassermann reaction was slightly positive A diagnosis of aortitis and aortic aneurism was made and he was given anti syphilis treatment He developed paralysis of the right arm rales and fever and died December 26 1928

Autopsy revealed pneumonia moderate and diffuse dilatation of the aorta and a tumor 3 cm from the bifurcation of the trachea Invading the peritracheal tissues the tumor compressed the right recurrent laryngeal nerve and infiltrated the wall of the œsophagus Histological examination showed it to be made up of elongated or polyhedral epithelial cells arranged in irregular strands and annular formations In places the picture resembled that of a basal celled epithelioma The cartilages were not invaded In the authors opinion the tumor had its origin in the glands of the tracheal mucosa

C W HAAGENSEN M D

Bettman R B Kelly J and Crohn N The Effect of Intrabronchial Injections of Iodized Poppy Seed Oil 40 Per Cent An Experimental Study on Dogs *Arch Surg* 1919 xiv 471

The instillation of 40 per cent iodized poppy seed oil into the bronchial tree of dogs was not followed by pneumonia nor any acute cellular reaction Most of the oil was rapidly expelled by coughing but small amounts were retained for at least seven months The presence of the oil did not cause a definite foreign body reaction

FRANK B BERRY M D

Jacobson H G Selander G and Westermarck N A Study of Acute Massive Atelectatic Collapse of the Lung *Acta med Scand* 1929 lxxv, 439

The authors report their findings in three cases of acute massive collapse (two complete and one partial) occurring after hæmoptysis in acute pulmonary tuberculosis two cases of acute collapse in acute pneumonia and four cases of collapse after the injection of lipiodol into the bronchi In the last group it was possible to follow the development and disappearance of the collapse very accurately Unlike the pulmonary collapse obtained in experiments on animals by plugging of the bronchi which is not discernible in the roentgenogram until after from four to six hours a collapse caused by lipiodol occurs in the course of from ten to fifteen minutes

As the degree and extent of the collapse bears no direct relation to the lipiodol filling of the bronchi the authors assume that the cause is not the lipiodol alone but the combined action of the lipiodol and a spasm or contraction of the bronchi

Their experience so far indicates that acute atelectatic collapse of the type described takes

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Oughterson A W The Hypertrophy of Fascia and Its Use in the Repair of Large Scrotal Herniae *Surg, Gynec & Obst* 1929 xlv 387

In 1903 Halsted called attention to the marked hypertrophy of the cremaster in large scrotal herniae of five or six years' duration and suggested the use of this muscle in the repair of such herniae. Oughterson calls attention to (1) the hypertrophy of the fascia with an increase in its tensile strength (2) the wide origin of fascia throughout the entire circumference of the hernial ring and (3) the fact that all layers are already attached to Poupart's ligament and therefore provide a natural first line of defense independent of sutures and the hazard of uniting. On the basis of these observations he describes a method of repair in which Halsted's use of the cremaster muscle is amplified to incorporate the combined fascial layers when the latter are rendered suitable by hypertrophy. WILBUR BAILEY, M D

McGregor A L The Third Inguinal Ring *Surg, Gynec & Obst* 1929 xlv 273

The author describes in detail the fascia of the lower abdomen, the scrotum, and the perineum as he found it in twenty dissections.

The complicated method whereby the scrotum is slung is analyzed and throws some light on the cause of the inequality of the rate of growth of hernia. The descent of the testicle is traced from the original position on the posterior abdominal wall to the scrotum. The opening through which the testicle gains admittance to the scrotum after having passed through the narrow defile formed by the inguinal canal is called by the author the third inguinal ring. In the adult it is situated immediately to the side of the midline and from $\frac{1}{2}$ to 1 in below the horizontal level of the upper border of the body of the pubis and the external inguinal ring. In the fetus it is immediately below these structures. A definite ring is present only when the reflected process of Scarpa's fascia forms a well marked ligament. If this is absent the outer boundary of the ring is missing.

No evidence was forthcoming in the investigation to lend the least support to the supposed evacuating function or the supposed traction function of the gubernaculum.

The literature on imperfect extra-abdominal testicular descent is reviewed and an anatomical explanation for this defect is advanced. The author attributes partial descent or ectopia to one or more of the following factors: (1) congenital anomalies or absence of the third ring (2) congenital fascial pockets and (3) congenital fascial ridges. The

various types of ectopia are described in detail and explained on an anatomical basis.

WILBUR BAILEY, M D

Salzer, H When and How to Operate for Inguinal Hernia in Children (Wann und wie sollen wir die Inguinalhernie beim Kinde operieren?) *Wien klin Wchenschr* 1929 i 674

There is still considerable difference of opinion as to how inguinal herniae develop in children and as to when and how they should be operated upon. On the basis of the anatomical observations of Tandler, Wrisberg, Sachs and Enderlein, which showed that in about 70 per cent of newborn male infants the processus vaginalis is still open, and on the basis of his own findings at operation on more than 1,000 herniae in children, the author has come to the conclusion that inguinal hernia in infants and children is always indirect and congenital and not acquired.

With regard to the treatment, he states that high removal of the hernial sac is sufficient. A plastic operation on the muscle may favor the later development of direct inguinal hernia by causing muscle atrophy. Operation should not be considered before the end of the first year unless the hernia interferes with the child's development or becomes incarcerated. It is usually impossible to obliterate the processus vaginalis completely by a truss and unless this is done an area favoring hernia remains. Funicular hydrocele should be treated surgically at the same time as the open processus vaginalis. In cases of cryptorchidism the testicles should be implanted in the scrotum if this can be done without tension; otherwise they should be implanted in the abdominal cavity in order to preserve their endocrine function.

HOLM (2)

Coley W B and Hoguet J P Retrocaecal Intestinal Hernia *Ann Surg* 1929 xc 765

The anatomy of the peritoneal fossa is reviewed. The retrocolic fossa is one of the sites in which intestinal herniae develop. Such herniae usually cause symptoms when partial or complete strangulation of their contents occurs.

In a case reported by the authors there had been several attacks of pain in the right lower quadrant of the abdomen. When pressure was made on the right side midway between the costal arch and the iliac crest the sensation of the slipping of bowel or omentum through a ring was felt and when the pressure was released the return of the bowel or omentum was suggested. A diagnosis of retroperitoneal hernia was made and subsequently proved at operation. Since repair of the defect the patient has been free from all pre-operative symptoms.

PAUL W GREELEY, M D

As a rule, dermoid cyst of the mediastinum causes death within from one to four years after the onset of the symptoms unless operation is performed. It is generally agreed that complete excision is the only satisfactory treatment.

The authors include in their article a tabulation by Beye of 119 cases and a tabulation by Aurossea of eight five cases. These statistics show that treatment by simple incision and drainage has a high mortality.

J FRANK DOLCHY MD

Heuer G J The Surgery of Mediastinal Dermoids

Ann Surg 1929 20, 692

Mixer C G and Clifford S H Congenital Mediastinal Cysts of Gastrogenic and Bronchogenic Origin Ann Surg 1929 20, 714

From an experience with four cases of mediastinal dermoid and a review of the literature Heuer concludes that in cases of uninfected dermoid the approach should be made by a long intercostal incision with or without resection of a rib and that in cases of infected dermoid or teratoma it should be such that the infected lesion may be isolated from the surrounding structures an approach perhaps effected best by multiple rib resections. He believes that in cases of complicated infected dermoid and teratoma it is advisable to attempt to clear up the infection before removing the lesion.

In cases of simple uninfected and otherwise uncomplicated mediastinal dermoid total removal is undoubtedly the treatment of choice since according to the literature it has been followed by the highest incidence of cure and the lowest mortality. In cases in which it is impossible because of extensive calcification, infection or adhesions or is undesirable because of the danger of postoperative complications the surgeon must be content with incomplete extirpation, but even this operation has given good results.

Heuer believes that in one of his cases the communication of the dermoid with a large bronchus was responsible for the patient's death. He concludes that under such circumstances the dermoid should be removed through the thoracic wall if possible, and removed after the lung has become

adherent to the parietal pleural around the point of communication.

In cases of uninfected dermoids closure of the thoracic wound should be complete and airtight. In the literature there are reports of many cases in which drainage or tamponade of large cavities left after the removal of the lesion was done with unsatisfactory results. The cavity became infected and, if the patient survived, multiple thoracoplasty operation were necessary to obliterate it. Convalescence was greatly prolonged and an unsightly deformity resulted. It has been noted by most observers that pleural effusion is a common sequel of tumor removal. This may be treated by aspiration or, if infected, by continuous air tight suction drainage. The drainage should be established not through but at a considerable distance from the closed thoracic wound. When this is done the result may be as satisfactory as in simple empyema.

MIXER and CLIFFORD report three ectodermal cysts of the mediastinum, two of gastrogenic origin and one of bronchogenic origin. The symptoms and physical findings were similar to those in cases of intrathoracic dermoid and teratomatous growths in the same location. The fluid which was aspirated from the cysts was white viscid and semi-transparent.

Histologically, the two gastrogenic cysts presented a typical section of the stomach wall showing a mucosa with glands containing chief and parietal cells, a submucosa, a circular and a longitudinal layer of smooth muscle and in one specimen a serosa and sympathetic nerve cells. The wall of the bronchogenic cyst was composed of fibrous tissue which was lined by epithelium partly ciliated and incorporated a small amount of cartilage and some smooth muscle.

These tumors may have their origin in a pinching off of an out bud from the foregut at the time of the development of the lung buds in the 4 mm. embryo.

The treatment of cysts of the mediastinum is preferably extirpation in one stage. In some cases preliminary drainage may be indicated. Though the mortality of operation is high surgery offers the only hope of cure.

JACOB M. MORA MD

Garin Froment Amic and Delorme Gastric Secretion Provoked by the Simple Presence of an Einhorn Tube in the Digestive Passages The Excitation Which Elicits the Secretory Reflex Appears To Be Produced at the Level of the Pharynx (*Sécrétion gastrique provoquée par simple présence d'une sonde d'Einhorn dans les voies digestives. Excitation qui déclenche le réflexe sécrétoire paraît se produire au niveau du pharynx*). Bull et mémo Soc médo d'hép de Par 1919 xlv 984

The authors found that if the Einhorn tube was allowed to remain in place after the stomach had been emptied of gastric juice as completely as possible an active secretion of gastric juice characterized by increased total acidity and the appearance of free hydrochloric acid, set in at the end of fifteen minutes. This secretory cycle lasted at least three quarters of an hour the acidity then returning to its original value.

Observations made on persons with laryngo-palatal anesthesia and on normal persons after cocainization of the soft palate and pharynx suggested that the secretion described is due at least largely to irritation of the velopalatal and pharyngeal mucous membrane which is probably mechanical. The phenomenon seems to be closely related to that of the provocation of gastric secretion by olfaction previously described by the authors in which mechanical irritation of the nasal mucous membrane appears to be the active factor.

The phenomenon is of physiological importance. If it is confirmed it would appear necessary to modify the classical physiological conception that mechanical excitation of the buccal cavity, simple excitation of the nerves of taste and the movements of deglutition are of themselves efficacious for the excitement of gastric secretion (Morat and Dozon). While this conception may perhaps hold for isolated mechanical excitations it does not appear to be true for excitations that are somewhat prolonged and are produced at the level of the base of the tongue the soft palate the pharynx and the nasal mucous membrane.

From a practical point of view a knowledge of the phenomenon is important to prevent erroneous interpretation of the results of experiments with substances thought to have an exciting influence on the secretion of gastric juice since a positive result may be due solely to the presence of the tube used for the introduction of the substance into the stomach. To eliminate this cause of error it would be necessary after the introduction of the tube to delay the introduction of the substance to be tested until the secretory cycle has reached its end and the acidity has returned to the normal for the empty stomach. Since cocainization of the soft palate was found to have an influence on the acidity values at least the earlier ones it would be prudent in cases in which this procedure has been carried out to facilitate deglutition of the tube to wait at least a quarter of an hour before removing the gastric juice.

CARPENTER.

Wanke R. A Surgicoclinical Consideration of Peptic Ulcer and Chronic Gastritis (Das Ulcusleiden und die chronische Gastritis in chirurgisch klinischer Betrachtung). *Deutsche Zeitschr f Chir*, 1929 ccxiv, 28

Wanke reviews the material of the Kiel clinic since the year 1912 when the first ulcer resection by the Billroth I method was done. In the period from 1912 up to May 19 5, 400 pylorus antrum resections were performed. On the basis of these cases most of which have been under observation for more than five years and in all of which macroscopic and microscopic studies of the lesions were made the author compares the clinical manifestations with the anatomical changes. As an example of the treatment he describes the procedure used during the years 1922 and 19 3. At that time resection was done in 35 per cent of the cases and gastro enterostomy alone in 13 per cent. In 7 per cent there was a free perforation. Therefore in 45 per cent of the cases coming to examination on account of gastric disturbances the symptoms were due not to ulcer but to a neurosis chronic gastritis or some other condition. Nine per cent of the latter were operated upon. In 3 per cent pylorus antrum resection was done.

The author believes that he is qualified to judge the resection treatment of chronic gastritis. In the literature there is still a difference of opinion because the changes in the gastric mucosa associated with chronic gastritis are noted much earlier and more frequently than the clinical symptoms. The author reports 6 cases in which a cure was obtained by antrum resection. In 1 of these a small carcinoma was found in the resected portion of the antrum. Of a series of 16 cases in which resection was done for chronic gastritis the operation resulted in a cure in 5 improvement in 2 and failure in 9. The failures are to be attributed in part to postoperative adhesions and in part to underlying nervous disturbances which cannot be relieved by the removal of a part of the stomach. On the other hand chronic gastritis is often the symptom of a general disease (chronic infectious disease) which does not offer a good prognosis for cure from surgical treatment.

Gastric crises are included by the author in his discussion. These are not specific disease complexes in luetic patients but are related to the local non-specific disease. If the author is correctly interpreted he believes that the gastric crises are produced not merely by the ulcers but also by the accompanying gastritis. When 3 cases of gastric crises are excluded from the 17 cases of chronic gastritis reviewed the end result of resection in the remaining 14 cases was a cure in 5 cases improvement in 3 and failure in 6.

Chronic gastritis has been treated also by gastro enterostomy. The results are poor. Pyloroplasty including pyloromyotomy was done in 10 cases. The result was successful in only 2 and in 1 of these it seemed to be due more to the regulated mode of living than to the operation.

Finally Wanke questions whether simple laparotomy may not be sufficient in chronic gastritis.

GASTRO INTESTINAL TRACT

Yates J L, Raine J and Stevens G W. Therapeutic Aspects of Gastro Intestinal Subcompensation. *Ann Surg* 1929 xc 517

Disturbances in the gastro intestinal tract caused by passive obstruction resulting from subcompetence of the muscularis of one or more segments may occur alone or in association with gross lesions of the stomach or duodenum, appendicitis, and cholecystitis. In the early stages of passive obstruction before the muscularis has been rendered thoroughly incompetent, non-operative measures should always be employed together with appendectomy or cholecystectomy if one of the latter is indicated.

In later cases with incompetence of the muscularis of the bowel wall operative restoration of the gradient is indicated in the cases of patients with sufficient mental and physical stamina to be benefited.

Operative treatment of ulcer and cancer of the stomach and of ulcer of the duodenum is more certain to afford immediate and lasting relief if the gross lesions are removed and the gastro intestinal gradient is restored. *JOHN W. NICHOLS, M.D.*

Gibson C L and Wade P A. The Fowler Position and Its Relation to Dilatation of the Stomach. *Ann Surg* 1929 xc 613

While the postoperative use of the semi recumbent or Fowler position is of value in the treatment of acute peritonitis and in the prevention of postoperative pneumonia the authors found in a study of 103 cases that the recumbent or flat position tends to prevent the occurrence of postoperative dilatation of the stomach especially after operations on the stomach and gall bladder. In cases in which the recumbent position was used the incidence of pulmonary complications increased only 2 per cent. *WILLIAM J. PICKETT, M.D.*

Mallory G K and Welsa S. Haemorrhages from Lacerations of the Cardiac Orifice of the Stomach Due to Vomiting. *Am J M Sc* 1929 clxxvii 568

In fifteen cases of massive gastric haemorrhage following alcoholic debauches there were no laboratory or X-ray findings to explain the bleeding. It was assumed that the blood came from a ruptured varix. In four such cases autopsy revealed at the cardiac opening of the stomach from two to four fresh fissure like lesions of the mucosa from 5 to 30 mm in length and from 2 to 3 mm in width which extended down to the muscularis and were arranged around the cardiac opening in the longitudinal axis of the oesophagus.

Microscopic sections showed the floor of the ulcers to be composed of fresh fibrin and an exudate of polymorphonuclear leucocytes. Definitely ruptured arterioles were also observed.

The authors suggest that such acute lacerations are caused by pressure changes in the stomach dur-

ing retching when a disturbed mechanism of vomiting due to fatigue of the vomiting center fails to relax the oesophagus and diaphragm.

M. HERBERT BARKER, M.D.

Deaver J B, and Burden V G. The Surgery of Pylorospasm. *Ann Surg* 1929 xc 530

The surgical pathology of the pyloric sphincter bears an important relationship to peptic ulcer. Abnormal function of the sphincter such as spasm and achalasia is considered due to a disturbance of innervation. The resulting changes in the motility function of the stomach are represented clinically by the syndrome of peptic ulcer. The disturbed physiology of the sphincter is the cause, not the effect, of the ulcer. A logical corrective measure for disturbed pyloric function would appear to be division of the nerve supply. The authors have practiced excision of the anterior half of the pyloric sphincter in thirty-one cases.

The pylorus is exposed through a high right rectus incision. The pyloric sphincter is readily recognized from the short transverse pyloric veins. An elliptical area including the anterior half of the sphincter is formed by two curved transverse incisions, one on either side of the sphincter. These incisions are carried down to the submucosa of the stomach and duodenum. The lower end of the elliptical area, including the sphincter, is cut serosally, peeled off from the underlying mucosa and cut off at the upper end. The resulting oval defect is then closed by a continuous suture uniting the gastric and duodenal serous edges.

Wide extension of inflammatory edema or the presence of a nearby active ulcer are contraindications to this operation on account of the danger that the sutures may not hold. When the operation has been properly performed there is no appreciable narrowing of the pylorus.

In all of the thirty-one cases in which this operation was done there was a more or less typical history of peptic ulcer and in six hemorrhage had occurred. Duodenal ulcer was found at operation in twenty-three cases, and in three there was an acute perforation. Gastric ulcer occurred in three cases and in one of these there was an acute perforation. Cholecystitis was present in nine cases. Seven of the patients with cholecystitis had an associated duodenal ulcer and two were suffering from pylorospasm. One patient was found to have a gastrojejunal ulcer.

The anterior half of the pyloric sphincter was excised in all cases. Additional operative procedures included excision of a duodenal ulcer in four cases, gastrojejunostomy in one case, cholecystectomy in nine cases, and sleeve resection of the stomach in two cases.

One of the patients died in the hospital from uremia. Of the thirty others fifteen were completely relieved of all their symptoms, two reported improvement, and only one was not relieved.

JOHN W. NICHOLS, M.D.

Garin Froment Amic and Delorme Gastric Secretion Provoked by the Simple Presence of an Einhorn Tube in the Digestive Passages The Excitation Which Elicits the Secretory Reflex Appears To Be Produced at the Level of the Pharynx (*Sécrétion gastrique provoquée par simple présence d'une sonde d'Einhorn dans les voies digestives L'excitation qui déclenche le réflexe sécrétoire paraît se produire au niveau du pharynx*) *Bull et mém Soc méd d hôp de Par* 1929 xlv 934

The authors found that if the Einhorn tube was allowed to remain in place after the stomach had been emptied of gastric juice as completely as possible an active secretion of gastric juice, characterized by increased total acidity and the appearance of free hydrochloric acid set in at the end of fifteen minutes. This secretory cycle lasted at least three quarters of an hour, the acidity then returning to its original value.

Observations made on persons with laryngo-palatal anesthesia and on normal persons after cocaineization of the soft palate and pharynx suggested that the secretion described is due at least largely to irritation of the velopalatine and pharyngeal mucous membrane which is probably mechanical. The phenomenon seems to be closely related to that of the provocation of gastric secretion by olfaction previously described by the authors in which mechanical irritation of the nasal mucous membrane appears to be the active factor.

The phenomenon is of physiological importance. If it is confirmed it would appear necessary to modify the classical physiological conception that mechanical excitation of the buccal cavity simple excitation of the nerves of taste and the movements of deglutition are of themselves inefficient for the excitement of gastric secretion (Morat and Doyon). While this conception may perhaps hold for isolated mechanical excitations it does not appear to be true for excitations that are somewhat prolonged and are produced at the level of the base of the tongue the soft palate the pharynx and the nasal mucous membrane.

From a practical point of view a knowledge of the phenomenon is important to prevent erroneous interpretation of the results of experiments with substances thought to have an exciting influence on the secretion of gastric juice since a positive result may be due solely to the presence of the tube used for the introduction of the substance into the stomach. To eliminate this cause of error it would be necessary after the introduction of the tube to delay the introduction of the substance to be tested until the secretory cycle has reached its end and the acidity has returned to the normal for the empty stomach. Since cocaineization of the soft palate was found to have an influence on the acidity values at least the earlier ones it would be prudent in cases in which this procedure has been carried out to facilitate deglutition of the tube to wait at least a quarter of an hour before removing the gastric juice.

CARPENTER

Wanke R A Surgicoclinical Consideration of Peptic Ulcer and Chronic Gastritis (Das Ulcusleiden und die chronische Gastritis in chirurgisch klinischer Betrachtung) *Deutsche Zeitschr f Chir* 1929 ccxiv 28

Wanke reviews the material of the Kiel clinic since the year 1912 when the first ulcer resection by the Billroth I method was done. In the period from 1912 up to May 1925, 400 pylorus antrum resections were performed. On the basis of these cases most of which have been under observation for more than five years and in all of which macroscopic and microscopic studies of the lesions were made the author compares the clinical manifestations with the anatomical changes. As an example of the treatment he describes the procedure used during the years 1922 and 1923. At that time resection was done in 35 per cent of the cases and gastro enterostomy alone in 13 per cent. In 7 per cent there was a free perforation. Therefore in 45 per cent of the cases coming to examination on account of gastric disturbances the symptoms were due not to ulcer, but to a neurosis chronic gastritis or some other condition. Nine per cent of the latter were operated upon. In 3 per cent pylorus antrum resection was done.

The author believes that he is qualified to judge the resection treatment of chronic gastritis. In the literature there is still a difference of opinion because the changes in the gastric mucosa associated with chronic gastritis are noted much earlier and more frequently than the clinical symptoms. The author reports 6 cases in which a cure was obtained by antrum resection. In 1 of these a small carcinoma was found in the resected portion of the antrum. Of a series of 16 cases in which resection was done for chronic gastritis the operation resulted in a cure in 5 improvement in 2 and failure in 9. The failures are to be attributed in part to postoperative adhesions and in part to underlying nervous disturbances which cannot be relieved by the removal of a part of the stomach. On the other hand chronic gastritis is often the symptom of a general disease (chronic infectious disease) which does not offer a good prognosis for cure from surgical treatment.

Gastric crises are included by the author in his discussion. These are not specific disease complexes in luetic patients but are related to the local non specific disease. If the author is correctly interpreted he believes that the gastric crises are produced not merely by the luetic but also by the accompanying gastritis. When 3 cases of gastric crises are excluded from the 17 cases of chronic gastritis reviewed the end result of resection in the remaining 14 cases was a cure in 5 cases improvement in 3 and failure in 6.

Chronic gastritis has been treated also by gastro enterostomy. The results are poor. Pyloroplasty including pyloromyotomy was done in 10 cases. The result was successful in only 2 and in 1 of these it seemed to be due more to the regulated mode of living than to the operation.

Finally Wanke questions whether simple laparotomy may not be sufficient in chronic gastritis.

Of 23 patients followed up failure was reported by 10. Only 4 were completely relieved of their symptoms. In the majority of the cases the improvement was to be attributed to a slight gain in weight, etc.

In summing up Wanke states that by no surgical procedure is it possible to obtain a successful result or improvement in more than 50 per cent of cases of chronic gastritis. He therefore doubts that chronic gastritis is a surgical condition and concludes that surgical treatment is basically inadvisable.

In the second part of his article Wanke discusses chronic gastritis and simple ulcer as evidenced by a simple scar. He concludes that the ulcer in these cases is of less importance than the basic chronic gastritis, and that the comparatively poor results obtained in such cases in the Kiel clinic which are the same as those obtained in chronic gastritis are to be interpreted in the same way as the results obtained in chronic gastritis alone. He stresses the importance of postoperative adhesions in these cases.

The most detailed discussion is devoted to chronic gastritis with chronic ulcer. Wanke again advances the theory that the ulcer is a manifestation or a result of the chronic gastritis. The latter is often still demonstrable but in some cases may have entirely subsided. If ulcer is considered a local disease pylorus antrum resection must be regarded the most etiologically grounded procedure and should be expected to yield the best results. The author reviews 235 carefully studied cases. One hundred and fifty five of the patients were cured, 50 were benefited and 40 were not benefited. The treatment was therefore successful in 84 per cent of the cases and failed in 16 per cent. This material Wanke divides into (1) simple chronic ulcers without complications and (2) chronic penetrating ulcers and so called organic hour glass stomach. In the first group there were 140 cases with a successful result in 79 per cent and failure in 21 per cent. In the second, there were 110 cases with a successful result in 90 per cent and failure in 10 per cent. Therefore if successful results can be obtained in at the most only 90 per cent of the severest cases we are not able to cure the ulcer condition by local measures with certainty. We may say definitely that the more pronounced the symptoms the more severe the primary ulcer process and the more localized the primary organic change in the ulcerous stomach the more successful the results will be and vice versa—the less pronounced the symptoms and the more diffuse the primary organic condition the greater will be the number of failures.

In most of the cases treated at the Kiel clinic the indication for the primary operation is indicative of the subsequent course. The author discusses the cases with poor results in detail. The first to be considered were 2 cases in which recurrent ulcer appeared after a Billroth I operation. These were the only 2 cases of recurrence in 339 cases treated by this method. In more than 70 cases in which a Billroth II operation was done at the Kiel clinic there was no instance of recurrence.

The author believes that 99 per cent of patients with ulcer were freed of the ulcers but not of the general ulcer disease or their general gastric symptoms.

In returning to his discussion of the changes in the stomach caused by chronic gastritis Wanke states that the cause of failure is the chronic gastritis of the fundus which in many cases is to be traced to a new disease of the fundus caused by a new exogenous or endogenous injury. Chronic gastritis not recurrent ulcer is the true after sickness of the stomach operated upon for ulcer. In 64 cases of failure there were 2 recurrences. Of the remaining 62 patients 43 were carefully re-examined and 17 were reported upon by their family physician.

Gastritis of the stomach stump is of 2 types, the one appearing as a new illness after years of well being and the other an unhealed form which has not been influenced by the operation. The first form was found by the author in about 6 cases. In all of the others the gastritis was not influenced by the pylorus-antrum resection and persisted after the operation. It is possible that the after treatment may be of great benefit in such cases.

As evidence that chronic gastritis is the true after illness of our ulcer surgery the author cites the perigastritis which is due to a gastritis. The picture of postoperative adhesions coincides with it.

The mortality of all operations in cases of all types is 12 per cent.

In summarizing Wanke states that chronic gastritis is the basis of the ulcer syndrome without ulcer. In a small percentage of cases it is a surgically unhealed remnant of the ulcer disease in the resected stomach. When a matured ulcer is removed from a gastritic stomach the amount of benefit resulting depends upon the severity of the changes present. The best permanent results are obtained in cases of the most serious ulcers as these are accompanied by the most severe reactive inflammatory organic changes.

With regard to the question as to whether resection is to be preferred to gastro-enterostomy the author states that with the latter procedure he had successful results in 76 per cent of his cases and failures in 24 per cent. The incidence of good results was therefore 14 per cent less than in cases treated by resection.

The last part of the work is devoted to a comparison of the clinical findings before the operation and the late results of treatment. Chemical examination of the gastric juice has yielded no prognostic index for the late results. The relation of the late results to the age of the patient is of interest. One should be very cautious in placing the indications for resection before the fortieth year. In cases of chronic ulcer surgical treatment is more likely to fail before the age of thirty years. The most severe ulcer processes are of course the ones to be operated upon.

But it has been found that the number of failures increases rapidly after the fortieth year. Therefore the younger the patient the more favorable the

late results of resection for severe ulcer processes, the greater the percentage of failure in chronic ulcer, and the more uncertain the results of treatment for simple ulcer. Regarding the relation of the duration of the ulcer to the late results, the author concludes that the earlier the process the more reparable it is, and the older it is the more irreparable it is, in the former case it should be treated medically, and in the latter, surgically. In chronic ulcer the duration of the disease seems to be of no prognostic importance. In cases of penetrating ulcer and hour glass stomach the prognosis depends on various factors, the most important of which is the patient's age.

VOGELER (Z)

Balfour D. C. The Problem of Recurrent Peptic Ulcer. *J Am Med Ass* 1929 XLIII 1037

As a first principle in the surgical management of recurrent ulcers the author states that trauma particularly to the mucosa of the stomach and jejunum must be reduced to the minimum. He is convinced that some recurrences can be attributed to devitalization of mucosa near the line of the anastomosis. A second principle is that a radical change should be made in the type of gastro enteric anastomosis. A third principle involves the use of a jejunostomy tube for feeding in cases in which the lines of anastomosis have been difficult to establish. A fourth principle is that patients must realize that every possible contributing factor to the tendency to recurrence should be eliminated.

This discussion of the various possibilities under which recurrence may take place may give an impression that recurrence of ulcer is a common sequence following operation whereas it is not. A most careful study of large groups of cases in which operation was performed at varying periods shows that the total incidence of recurrence of ulcer regardless of the primary type of operation or the site at which the recurrence develops is not more than 5 per cent. If this figure is compared with the percentage of recurrences following any other type of treatment for chronic peptic ulcer and if the excellent results which follow conservative surgical practice are considered it is clear that surgical treatment does not require any apologies for its results.

Constantin II. Pyloric Ulcer Treated by Gastro Enterostomy with a Button. Two Years Later Peptic Ulcer Button Remains in Place. Gastro pylorotomy (Ulcer pylorique traité par gastro-enterostomie au bouton il y a deux ans bouton demeure en place ulcère peptique gastropylorotomie). *Bull et mém Soc nat de chir* 1929 LV 1059

The case reported was that of a man aged fifty four years who had been subjected to operation for crises of pain in the gastric region which had recurred over a period of eleven years and had finally become complicated by vomiting. Details of the operation could not be obtained but a metallic button was used and the patient was told to watch his

stools for its expulsion. The immediate results of the operation were excellent, but a year later the patient began to experience pain a quarter of an hour after eating which was accompanied by bilious vomiting and led to emaciation. When he consulted the author for treatment two years after the operation the button had not appeared in the stools and on deep palpation could be felt rolling in front of the spinal column. Roentgenoscopy showed that the gastro enterostomy orifice was entirely permeable.

When the abdomen was opened the anastomotic button was found still in position. Between the button and the pylorus the stomach was thickened and in places indurated. The swollen mass was adherent posteriorly to the pancreas. The button was in juxtaposition to the thickened gastric zone. Contrary to the usual findings in peptic ulcer, there was no thickening around the gastro enterostomy opening or infiltration of the transverse mesocolon. Closure of the gastro enterostomy followed by pylorotomy was decided on.

The duodenum was sectioned and the lower end closed. Moving the pylorus caused a tear in the posterior gastric wall which was very friable and the tear brought into view an ulcer which had penetrated the parenchyma of the pancreas. The anastomotic button was found in contact with the ulcer and was easily removed. The mouth of the gastro enterostomy showed no ulceration. It was thought that a silk or linen suture in the wall might have prevented expulsion of the button. Such a suture was therefore sought but was not discovered. The gastro enterostomy was closed, the pylorus removed and a transmesocolic anastomosis established according to the Polya method. Smooth healing resulted.

CARPENTER

Charrier A. and Villar J. Should Balfour's Operation Be Used in Gastric Surgery? (L'opération de Balfour doit-elle être utilisée en chirurgie gastrique?) *Rev de chir* 1929 XLIII 333

The authors report eight cases of gastric ulcer in which Balfour's operation was performed. The operation was easy but in two cases was followed by a grave pulmonary condition and in one case each by extreme excitement with delirium and fever, a slight purulent reaction, and moderately severe subumbilical peritonitis. In all except one case the late results were unsatisfactory. In four cases they were so poor as to necessitate reoperation. The second operation revealed an extensive local inflammatory reaction. It consisted of gastro enterostomy in three cases and of gastropylorotomy in one case and was successful.

From a review of French and American literature the authors conclude that their results are not exceptional. They state that fresh small movable ulcers that are easy of access can be destroyed with the cautery or the histoury if gastro enterostomy is also done. They prefer the bistoury to the cautery. In cases of old adherent callous ulcers the type most

frequently encountered the operation will be difficult and will leave behind unsatisfactory conditions
CARPENTER

James R. Two Cases of Intestinal Obstruction Due to Strangulation of a Loop of Small Intestine in an Opening of the Left Broad Ligament *Brit J Surg* 1929 xvii 333

The author reports two cases of obstruction of the ileum in an opening in the left broad ligament in parous women aged fifty-eight and thirty six years.

In the first case the obstruction was preceded by repeated attacks of abdominal pain over a period of ten months. At operation it was found that a loop of ileum 15 in. long had passed through a hole in the left broad ligament from the front and lay in distended coils in the posterior cul de sac. The opening in the broad ligament which was about 2 cm. in diameter, was situated adjacent to the uterus and just below the fallopian tube and the round ligament. The intestine was withdrawn from the opening and the defect closed. Recovery was uneventful.

In the second case the intestinal obstruction was preceded by an attack of abdominal pain occurring three months previously. Operation performed in spite of a very severe auncular fibrillation revealed an obstruction of the distal ileum of the Richter type in the region of the left broad ligament. The obstruction was released but because of the patient's poor condition no further exploration was done. Seventeen hours after the operation death occurred from cardiac failure. Autopsy disclosed an opening 2½ cm. in diameter through the left broad ligament between the fallopian tube and the round ligament. The intestine was in good condition.

In the author's opinion it is conceivable that the defects in the broad ligament were produced by pregnancy.
J. EDWIN KIRKPATRICK, M.D.

Raine F., and Perry M. G. Intestinal Obstruction. Experimental Studies on Toxicity Intra Intestinal Pressure and Chloride Therapy *Arch Surg* 1929 xix 478

In the experimental work reported in this article the authors attempted to determine (1) the toxicity of the contents of obstructed bowel when they are introduced into obstructed and non-obstructed bowel, (2) the effects of varying intra intestinal pressure on the length of survival after the production of obstruction and (3) the therapeutic value of sodium chloride under varying conditions of intra intestinal pressure.

Rabbits were used as the experimental animals because as they do not vomit their intra intestinal pressure can be controlled. All operations were done under ethylene anaesthesia.

It was found that the higher the site of the obstruction the more quickly the animal died. When the obstruction was in the duodenum the period of survival varied from fourteen to eighteen hours whereas when the obstruction was in the lower ileum the period of survival varied from eighty to

two hundred hours. Death occurred more rapidly when food or water was taken.

Loss of all secretions entering the stomach and duodenum is incompatible with life. Therefore the lower the obstruction the greater is the resorption of secretions and the less are the dehydration and depletion of blood forming the secretions. The changes in the blood following intestinal obstruction namely a decrease in the chlorides and an increase in the non protein nitrogen are the same no low obstruction as in high obstruction. The question is raised as to whether it is not the loss of secretions normally resorbed instead of the toxemia which causes the serious symptoms in intestinal obstruction.

The release of temporary obstruction even when the rabbit was near death resulted in a rapid return to health and quick restoration of the blood picture to normal. Removal of the stomach contents prior to the release of the obstruction retarded recovery, and the substitution of sodium chloride and hydrochloric acid in amounts equal to the water and chloride removed was followed by more rapid recovery than the substitution of distilled water alone. The rabbits recovered more rapidly when they were permitted to resorb the contents of the obstructed bowel than when such contents were removed.

When the intra intestinal pressure was reduced by means of gastrostomy life was prolonged. The capacity of the stomach to absorb water is very great. The introduction of unabsorbable substances into the stomach at once increased the intra intestinal pressure and hastened death as did the introduction of gastric and duodenal contents obtained from jejunal obstruction in another animal. Diminishing the intra intestinal pressure in the obstructed bowel prolonged life because it decreased peristalsis which in turn decreased secretion and promoted resorption whereas increasing the intra intestinal pressure shortened life because it provoked hyperperistalsis which in turn stimulated secretion and diminished resorption.

The therapeutic value of solutions of sodium chloride increased as the intra intestinal pressure in the obstructed bowel diminished and conversely, the value diminished as the intra intestinal pressure increased. When a 5 per cent solution of dextrose was substituted for the normal salt solution life was prolonged for the same length of time unless a jejunostomy had been performed in which case the duration of life was shorter when the dextrose was administered than when the saline solution was used. Sodium chloride establishes a normal blood chloride level which corrects alkalosis.

Peritonitis is more dangerous because of the accompanying intestinal paresis than because of the toxicity of infection. Large doses of morphine inhibit peristalsis and diminish secretion and thus aid materially in keeping the intra intestinal pressure low. Jejunostomy is a valuable method of reducing intra intestinal pressure but should be done only to relieve excess pressure as complete drainage

of the gastric and duodenal secretions is as disastrous as continued paresis.

The kidneys show little damage from the intestinal obstruction. The increase in the urea in the blood and urine demonstrate that waste products are forming more rapidly than normal and more rapidly than the kidneys are able to excrete them.

CYRIL J. GLASPEL, M.D.

Phillips K. and Stowe W. P. Intestinal Obstruction and Septic Invasion of the Peritoneum. Combined Medical and Surgical Treatment. *Arch Int Med* 1929 xiv 543

Both experimental and clinical evidence indicates that persons with obstruction of the bowel ileus and septic invasion of the peritoneum not including streptococcal invasions have the underlying factor of toxemia related definitely to protein metabolism within the intestine by bacterial action. The evidence indicates that the toxemia is the primary factor following the initial condition and that the symptoms and changes in the blood chemistry are secondary to it.

As such patients are usually very poor surgical risks the authors treat them as follows:

1. A Rehfuß tube is passed into the stomach and duodenum and if necessary is left in place for several days during which time hourly aspirations, washings, and instillations are done.

2. A 50 per cent solution of dextrose is given intravenously with care to inject it slowly. The amount of each dose varies from 40 to 100 c.c. depending on the size of the patient. At the end of the injection enough insulin to burn the dextrose calculated on the basis of 1 unit per 2 gm. of dextrose, is given hypodermically.

3. The blood stream is supplied with an excess of fluid. The effect is best if this is given a short time after the dextrose. The intravenous method is preferred. As a rule Ringer's solution is used, but, if desired normal salt solution may be employed.

4. After the diuresis and the effect of the dextrose and saline solution are well under way an intravenous injection of a 10 per cent solution of sodium chloride is given the amount varying from 75 to 150 c.c. according to the size of the patient.

5. In the cases of patients who fail to respond to the medical management as well as expected a high enterostomy is done under local anesthesia.

In a series of forty cases among private patients (not including cases of streptococcal invasion) the mortality was 10 per cent. GEORGE A. COLLETT, M.D.

with a diagnosis of fibroma still bleeding in spite of twelve roentgen treatments. Her general condition was good. Operation was performed under ether anesthesia. The uterus was as large as that of a three and a half months pregnancy and closely adherent to several loops of intestines. Some of the adhesions were large and superficial and others were narrow bands. Liberation of the uterus was difficult. At several points it was necessary to incise the uterine tissue to avoid tearing the intestine. A classical subtotal hysterectomy was performed. Considerable hemorrhage occurred from the right uterine artery, the wall of which was very friable. After this hemorrhage had been checked peritonization was begun but the peritoneum also was friable and bled easily. A Mikulicz drain was inserted.

The postoperative course was normal for the first four days but on the fifth day signs of occlusion of the intestine developed. On the sixth day the patient was in very poor condition with a drawn face, a pulse of 110, a temperature of 37.4 degrees C. and nausea. That night she vomited frequently. Irrigation of the stomach brought about improvement. At 5 o'clock in the morning of the seventh day irrigation of the stomach evacuated a liquid with the appearance and odor of intestinal contents. The patient was in desperate condition with a mask like face and a pulse of 135-140. Her abdomen was enormously distended the intestinal occlusion being complete.

At 6 o'clock she was given 20 c.c. of hypertonic salt solution intravenously and 1 liter of physiological solution subcutaneously but no apparent change resulted. At 10 o'clock her stomach was washed. The liquid was then not fecaloid. At noon another liter of salt solution was given subcutaneously and a second intravenous injection of the hypertonic solution was administered. The intravenous injection caused a violent reaction with intense pain in the limbs. At 4 o'clock a third intravenous injection was given and caused another violent reaction similar to that following the second injection. At 8 o'clock a fourth intravenous injection was given. The patient then looked better. Her pulse was 110 and stronger. However the occlusion persisted and the outlook was not encouraging. The author is convinced that without the intravenous injections and the repeated irrigations of the stomach she would not have lived through the day. On the eighth day she was given 80 c.c. of salt solution in four intravenous injections of 20 c.c. each and 2 liters of physiological solution by subcutaneous injection. After this treatment she showed further improvement and in the afternoon passed several liquid stools. On the following day she was out of danger.

ROUX BERGER who read this report to the Society said that he had experienced difficulty in two operations for irradiated fibroma, but he has operated on many patients after irradiation without any complications.

AUDREY G. MORGAN, M.D.

Ibos P. Hysterectomy for Irradiated Fibroma. Postoperative Intestinal Occlusion. Cure Brought About by Hypertonic Salt Solution Given Intravenously. (*Hystérectomie pour fibrome irradié: occlusion intestinale post-opératoire guérie par le sérum salé hypertonique intraveineux*). *Bull et mémo Soc. nat. de chir.* 1929 iv 1012

The patient whose case is reported was a woman thirty six years of age who was sent to the author

Pouliquen The Treatment of Intestinal Invagination by Opaque Enema (A propos du traitement de l'invagination intestinale par le lavement opaque) *Bull et mém Soc nat de chir* 1929 15 710

The author reports two cases of intestinal invagination. The first was that of a boy aged two years who was taken with colic and vomiting. The diagnosis of invagination was made in spite of the absence of bloody stools. A mass seemed to be present in the infra umbilical region. When a barium enema was given under a pressure of 1 meter, the fluid rose rapidly, stopped a moment in the infra umbilical region and then passed to the hepatic angle. Filling of the cæcum required about twenty minutes. After the cæcum had been filled the appendix became visible. The next morning the child was completely cured. During the reduction two roentgenograms were taken. One was made when the mass was at the hepatic angle. The other was taken after the cæcum had been filled and just before complete reduction was effected. At this time the appendix was not yet visible and at the internal border of the cæcum there was an indentation which suggested that the invagination was of the ileocecal type.

The second case was that of a boy nineteen years of age who was seized with colic and during the succeeding night experienced attacks of pain. The next day the pain persisted but the patient was able to work. He passed gas and did not vomit. Two days later vomiting began and he was taken to the hospital with a diagnosis of appendicitis. Intestinal invagination was suggested to Pouliquen by the absence of fever and the character of the intermittent attacks. This diagnosis being confirmed by the discovery of an infrahepatic mass a barium enema of about 1½ liters was given under pressure of 1 meter. The opaque column rose rapidly as far as the liver and then stopped. After taxis for several minutes the cæcum became visible. Although there was no trace of barium in the small intestine the clearness of the caecal contours was considered to indicate that complete reduction had been accomplished. However the next day the patient again had attacks of pain which increased in severity. During a second roentgen examination the barium passed easily and filled the cæcum but the valvular region could not be seen clearly. Reduction of the head of the invagination which was in the end of the small intestine, at the valve was accomplished through a right lateral incision. The invagination was of the ileocolic variety. The head was 6 or 7 cm from the valve. The report of this case contains the reproductions of three roentgenograms. The first shows the mass at the hepatic angle the second the cæcum beginning to fill, and the third the caecal ampulla filled with barium. There was no trace of the opaque fluid in the small intestine.

The author concludes that the opaque enema is incapable of curing ileocolic and purely ileal invaginations and is often useless for their delineation and differentiation. He states that the image of a

smoothed out cæcum may suggest complete disinvagination when the head unreduced, remains hidden behind the valve. When the opaque fluid does not pass into the small intestine (which is unfortunately the rule) there is nothing to show reduction. In subacute cases it might be advisable to give a certain amount of barium salt by mouth to see if it will pass into the cæcum but in acute cases this procedure is useless as it is impossible to delay treatment for the necessary six or seven hours.

In conclusion Pouliquen says that while the opaque enema does not effect complete reduction in every case it effects partial reduction in many and may bring the invaginated mass into the right iliac fossa where it can be reduced through a right lateral incision without causing evisceration. He therefore gives an ordinary or barium enema under pressure waits twenty minutes, and then unless the mass remains perceptible on the left side makes an exploratory incision in the right iliac fossa. *Pact.*

Mathieu P. The Use of the Barium Enema as a Pre Operative Procedure in the Treatment of Extensive Acute Intestinal Invaginations (L'utilisation du lavement baryté comme manœuvre préopératoire dans le traitement des invaginations intestinales aiguës (étendues) *Bull et mém Soc nat de chir* 1929 15, 680

When the head of an invagination reaches the rectum it is difficult after median laparotomy to approach the tumor formed by the invagination which is adherent to the sacrum or to pick up the head of the invagination. Maneuvers which require the introduction of the whole hand into the abdomen nearly always cause evisceration. A barium enema with fluoroscopic examination facilitates reduction and brings the head of the invagination higher. When the head of the invagination is brought to the right reduction may be effected through a right lateral incision with little danger of causing evisceration. *Pact.*

Bertrand P. and Clavel G. Total Volvulus of the Small Intestine About the Mesenteric Axis. Anatomical and Clinical Considerations (Le volvulus total du grêle sur l'axe mésentérique: considérations anatomiques et cliniques) *Lyon chir* 1929 xxxi 351

The authors report a case of complete torsion of the small intestine without involvement of the cæcum which was due to an anomaly of the embryonic adhesion of the terminal segment of the ileum. The patient was a man fifty years of age who had had a large reducible inguinal hernia on the right side for a long time. Following a sudden attack of severe pain in the abdomen and tension and pain in the hernia the hernia became irreducible and vomiting soon began. This condition continued until the next morning when the hernia again became reducible and its reduction was followed by temporary relief. A diagnosis of strangulated hernia was made and the patient taken to the hospital.

At operation the peritoneal cavity was found to contain a large quantity of very offensive fluid and the entire small intestine was uniformly distended. Complete eversion revealed clockwise torsion of the intestinal mass. The torsion was reduced and an ileostomy performed. After brief amelioration the symptoms of obstruction became accentuated and two days later the patient died.

Autopsy revealed recurrence of the volvulus. The intestine was hyperemic, dilated and in places necrotic. In the right iliac fossa there was a tense avascular band extending from a point 15 cm above the end of the ileum to the abdominal wall in the vicinity of the inguinal ring. Just above the ileocecal angle the ileum was adherent to the posterior abdominal wall for a short distance. Above this segment it became free but only to pass beneath the avascular band. The sac of the hernia was empty.

The freedom of the cecum from involvement was due to the adhesion of the ileum to the posterior abdominal wall. The band that passed over the ileum was produced simply by the traction of the root of the mesentery on the surrounding peritoneum. Similar bands are often observed in volvulus of the pelvic colon and it is important to recognize their true nature as the volvulus may be overlooked and the band taken for the cause of an internal strangulation. A predisposing cause of the volvulus may be found in the adhesion of the terminal portion of the ileum. This anatomical arrangement renders the root of the mesentery nearly vertical thus facilitating the rotation of the intestines and disturbing their normal equilibrium.

The association of hernia and volvulus has long been recognized. According to Delbet the hernia may contribute to the volvulus in one of three ways—by lengthening the mesentery of the herniated loops and thereby disturbing the stability of the intestines by fixing a loop and rotating the remaining intestine about this point or by giving a rotating movement to the intestinal mass at the moment of forcible reduction.

Clinically the attention of the surgeon is drawn to the hernia and the volvulus is discovered after the herniotomy has been undertaken or not at all. For this reason the mortality is very high.

ALBERT F. DE GROOT, M.D.

Molesworth H. W. L. Ileocolostomy. An Accident from This Operation with Some Remarks upon the Results of a Closed Heat Loop. *Brit. J. Surg.* 1929 xvii 344.

The patient whose case is reported was a boy fourteen years of age who was first seen by the author in June 1927 when he was suffering from intestinal obstruction with marked toxæmia. At the age of five years the patient had been subjected to an operation for acute appendicitis in which drainage was used. Following this operation he had numerous bilious attacks.

Laparotomy performed by the author revealed a large quantity of free fluid in the peritoneal cavity

and very marked distention of the small intestine. The obstruction caused by very dense adhesions was found in the right iliac fossa. As liberation of the obstructed ileum was regarded too hazardous, an anastomosis between a distended coil and the transverse colon was performed and a high jejunostomy was done.

Aided by the subcutaneous administration of saline solution the patient made a good recovery, but during the year following the operation he had many attacks of spasmodic pain.

In August, 1928, he entered the hospital again with a more severe attack of pain accompanied by vomiting. He had no obstipation and did not appear ill. A barium meal and enema revealed no abnormality. Rapid recovery occurred.

In March 1929 he was re-admitted complaining of severe pain and vomiting. The bowels were acting regularly but there was slight distention of the abdomen and coils of intestine were visible and palpable. There was a mild pyrexia but no toxæmia such as was present at the time of the previous operation.

At a second operation performed by the author, blood stained fluid escaped when the peritoneum was opened and distention of about 4 ft. of intestine distal to the ileocolostomy was found. The intestine had passed from the left of the ileocolostomy through the ring formed by the anastomosis and had rotated in an anti clockwise direction through a complete turn. It was evident that neither the hernia nor the volvulus was of recent occurrence as they were both fixed by somewhat dense adhesions. After the loop had been emptied of a thin yellow offensive fluid, the hernia and volvulus were reduced and an anastomosis was made between the closed loop and the sigmoid. Recovery was uneventful.

The author questions the validity of Williams' theory of bacillus welchii toxæmia in intestinal obstruction because in this case a closed loop of ileum which had been present for at least three days or longer caused no demonstrable toxæmia whereas obstruction in continuity produced marked toxæmia. He believes that the enthusiasm for serum treatment of the toxæmia of intestinal obstruction is not well founded and that when indicated ileostomy or jejunostomy with the use of saline solution will give equally striking results.

J. EDWIN KIRKPATRICK, M.D.

Van Beuren F. T. Jr. The Mortality of Enterostomy in Acute Ileus. *Ann. Surg.* 1929 xc 387.

The most important danger in acute ileus is intestinal damage leading to toxæmia and peritonitis. Intestinal damage is due primarily to intestinal over distention or strangulation. The most effective means of preventing or relieving intestinal over distention is enterostomy done at the right time and in the correct manner.

Van Beuren reports an analysis of all cases of acute ileus operated upon during the past twelve years at the Presbyterian Hospital, New York.

This twelve year period is divided into three periods of four years each, the results in the periods being compared. The findings are summarized as follows:

1 Acute ileus was diagnosed more frequently during the period from 1924 to 1927 than during the period from 1916 to 1923.

2 The diagnosis is now being made earlier than formerly.

3 The average mortality has been reduced during the past eight years and especially during the past four years.

4 Enterostomy is now being performed more frequently than formerly. It was done in one third of the cases in the first period, one half of those in the second period, and three fourths of those in the third period.

5 There has been a greater reduction in the average mortality in the cases treated by enterostomy than in those not so treated.

6 The reduction in the average mortality in the cases not treated by enterostomy may be largely accounted for by the reduction in the number of late cases but the reduction in the average mortality in the cases treated by enterostomy cannot be accounted for in this way.

CYRIL J. GLASPEL, M.D.

Jancke C. E. Perforation of Simple Ulcer of the Small Intestine (Zur Perforation des einfachen Duennarmgeschwüers). *Zentralbl. f. Chir.* 1929 p. 1222.

By the term "simple ulcer of the small intestine" is meant ulcers of the mucosa and the deeper layers of the small intestine which usually occur singly and resemble in shape the peptic ulcer of the stomach and duodenum. Such lesions are rare and are usually seen by the surgeon following perforation. The author reports two cases which came to operation with the diagnosis of acute peritonitis due to the perforation of a gastric ulcer.

The first case was that of a man forty-one years of age who had suffered for six months with attacks of severe gastric pain accompanied by diarrhea and vomiting. Operation performed during a renewed attack of pain disclosed a perforated ulcer in about the middle portion of the small intestine. The ulcer was excised and the resulting defect sutured. Following primary recovery another perforation occurred and resulted in the formation of an intestinal fistula. The patient died from inanition. Autopsy revealed numerous small ulcerations chiefly in the ileum. In places these lesions were confluent. Between others the mucosa was edematous. Besides the intestinal ulcers, there were two finger ulcerations on the greater curvature of the stomach. Microscopic examination disclosed marked inflammatory infiltration of all layers of the intestinal wall.

The second case was that of a man seventy-one years of age who had suffered since he was twenty-four years of age with gastric and intestinal disturbances associated with constipation alternating with

diarrhea. Four days before his admission to the hospital he was taken with shooting pains in the abdomen which could not be definitely localized and the day before he was seen by the author the pains had become worse in the region of the umbilicus and had resulted in collapse. Operation disclosed a perforated ulcer of the small intestine 3 cm. above the ileocecal valve. The ulcer was turned in and sutured over. Death occurred on the following day. Autopsy revealed nothing of note besides the ulcerated area. There was no sign of typhoid, tuberculosis or leuc.

In a third case cited by the author there was a perforation of the jejunum 30 cm. beneath the ligament of Treitz. As this lesion followed an accident the case was not included with the cases of pure simple ulcer.

The symptoms of simple ulcer of the small intestine are extraordinarily varied. Many of such ulcers progress to perforation without symptoms. The cause of the lesions is unknown. Their formation is often explained in the same way as that of peptic ulcers of the duodenum. The ulcers situated deep have been attributed to the effect of tryptic enzymes on lesions in the intestinal wall. The author suggests that islands of gastric mucosa in the mucosa of the intestine might afford a favorable terrain for their development. BOER (2)

Tuomikoski V. How Much of the Small Intestine of Man Can Be Removed without Endangering Life? (Wie viel kann vom Duennarm des Menschen entfernt werden ohne dass sein Leben dadurch gefahrdet wird?) *Acta chirurg. Scand.* 1929 kv. 375.

The author investigated the utilization of nutrients in the case of a man whose small intestine had been resected by Palmén to such an extent that the remaining part of the jejuno ileum measured only between 80 and 90 cm. Seven years after the operation the patient enjoyed good health and was able to perform manual labor of medium severity.

As the utilization of nutrients was found to be relatively good the conclusion is drawn that life is immediately endangered only when no more than one half a meter of the jejuno ileum remains. This length is necessary for anastomosis to the remaining portion of the small intestine without causing tension.

Black J. M. Primary Jejunal Ulcer. *Brit. J. Surg.* 1929 xvii. 335.

Black reports a case of primary jejunal ulcer occurring in a man fifty-three years of age. The patient was awakened at 4 a.m. by a sudden and very acute pain in the epigastrium and at 8 p.m. was sent to the hospital with a diagnosis of acute appendicitis. On examination rigidity and tenderness were found throughout the abdomen and a diagnosis of perforated gastric ulcer or rupture of the appendix was made.

Operation was performed at 8:30 p.m. When the peritoneum was opened there was a rush of green

watery fluid. The appendix was normal. On examination of the stomach and duodenum, no perforation or lymph was discovered. When the transverse colon was delivered a large amount of green lymph was found in the left hypochondrium. At a point 2 ft from the beginning of the jejunum on the antimesenteric border, there was a congested area the size of a six pence piece, with a yellow slough in its center. When the plug of lymph was sponged off greenish fluid appeared through a perforation the size of a match head. The ulcer-bearing area was excised and a lateral anastomosis performed. The abdomen was then closed with drainage and 80 ccm of bacillus welchii antitoxin were administered intramuscularly.

The patient made a good recovery and was discharged from the hospital at the end of a month.

On examination of the resected portion of the jejunum Harvey found a small ulcer of the mucosa in continuity with a perforation of the serosa which on microscopic examination showed an acute inflammatory cell reaction with exudation extending from the Lieberkühn's glands of the mucous membrane through the peritoneum at the site of the perforation.

According to the literature primary jejunal ulcer is a very rare lesion. Jejunal ulcer following gastrojejunostomy is more common.

J EDWIN LIRKPATRICK M.D.

Pieri G. Resection and Anastomosis of the Cæcum and Sigmoid Colon in the Treatment of Cæcum Mobile (L'anastomose résection cæco-sigmoïdienne dans le traitement du cæcum mobile). *J de chir* 1929 LVIII 33.

A mobile cæcum remains clinically latent until stasis occurs in it. Stasis not the mobility itself is the indication for operation. The procedure recommended by the author consists in wide resection of the cæcum, resection of the wall of the lower part of the sigmoid and end to side anastomosis. A simple anastomosis does not divert the cæcal contents with sufficient surety and completeness, neither does it eliminate the wall of the cæcal cul de sac which has either already undergone changes or has become liable to changes. The anastomosis is made in the lower part of the sigmoid near the promontory in order to fix the cæcal stump in such a manner that it will no longer exert traction on its mesentery and in order to assure direct descent of the cæcal contents without the possibility of reflux into the proximal part of the sigmoid.

The transverse section of the cæcum starts above the appendix and runs upward and medially to a point 1 cm from the lower margin of the insertion of the small intestine. The incision in the sigmoid is at least 6 cm long and is made on the anterior surface between the double row of epiploic appendices. The technique demands patience and exact suturing.

The highest part of the posterior surface of the cæcum is stitched to the extreme lateral part of the sigmoid loop with continuous silk sutures. A second

row of continuous sutures, parallel and concentric, is placed at a distance of a few millimeters from the first. The ends are left sufficiently long for use in suturing the anterior surface of the cæcum to the left lateral surface of the sigmoid loop. An intestinal clamp is placed on the base of the cæcum above the rows of sutures. With another clamp the anterior wall of the base of the sigmoid loop is elevated and compressed. The posterior wall of the cæcum is then sectioned at a distance of 3 or 4 mm from the second row of sutures. Close to the insertion of the appendix the anterior wall is sectioned with scissors. A strip of the wall of the sigmoid is then resected between the row of sutures and the insertions of the epiploic appendices a few millimeters of wall being left on each side. Longitudinally the resected strip is 0.5 cm shorter than the row of sutures.

The intestinal walls are next sutured with catgut through their entire thickness. The suturing is begun on the side corresponding to the posterior wall of the cæcum, continuous sutures being used. With the same piece of catgut it is continued on the anterior wall where Connell's sutures are employed. When the intestinal cavities have been thus closed, the clamps are removed and the double row of seromuscular sutures are continued anteriorly. The sigmoid loop immediately below the anastomosis is fixed to the right wall of the pelvis by a few interrupted stitches to assure a vertical direction of the sigmoid loop below the anastomosis with avoidance of kinking and to reduce traction on the sutures of the anastomosis. It is regarded as prudent also to obliterate the space that has been formed between the mesentery of the sigmoid and the posterior peritoneum.

Pieri has performed this operation in fourteen cases with good results. The first case was treated three years ago. The technique is shown by drawings.

CARPENTER

Freedman H J. Forty Two Cases of Appendicitis in Children Occurring During an Epidemic of Upper Respiratory Tract Infection. *Arch Pediat* 1929 XLVI 604.

The two youngest patients whose cases are reviewed by the author were two years of age. In both perforation of the appendix occurred. Freedman is of the opinion that perforation occurs more frequently in children than in adults. He states that the temperature which in adults is usually elevated in perforated appendicitis is of little decisive value in the diagnosis of this condition in the young. The pulse is quite an accurate sign of toxicity being considerably elevated in perforated appendicitis and only slightly elevated in non perforated appendicitis. The leucocyte count is very important. Leucopenia may be indicative of severe toxicity and overwhelming infection. The urine often shows white blood cells in appendicitis.

The early symptoms are not uniform. In 79.4 per cent of the cases reviewed the first symptom was

pain. This was usually localized in the right lower quadrant of the abdomen. Vomiting was a common symptom, especially in cases of perforation. Diarrhea was exceptional, whereas constipation occurred in 67.7 per cent of the cases. The presence of acute infection of the upper respiratory tract and the discovery of enlarged abdominal glands at operation suggested to the author that acute appendicitis may often be a sequela of infection of the upper respiratory tract. The physical findings of most value in the diagnosis were localized tenderness and spasm in the abdomen.

JONNY H. WOOLSEY, M.D.

Ferey, D. A Case of Acute Diverticulitis of the Ascending Colon Simulating Acute Appendicitis (Un cas de diverticulite aiguë du colon droit simulante une appendicite aigue). *Bull. et mém. Soc. nat. de chir.*, 1929, 14, 747.

Ferey's case was that of a woman twenty six years of age who was seized at 7 o'clock in the morning with severe pain in the right side of the abdomen which irradiated toward the epigastrium and was followed by nausea. During the day she passed gas and two stools without diarrhea. The urine was cloudy and scanty. Examination the next day revealed tenderness and marked contracture of the abdominal wall in the region of McBurney's point. The temperature was 38.4 degrees F. and the pulse 100.

When the abdomen was opened a hard reddish sclerolipomatous mass the size of a large chestnut was found on the antero-external surface of the ascending colon about 10 cm. from the fundus of the cæcum. Within the fatty part of this mass there was a red inflamed diverticulum which seemed to have been strangulated by the colon wall through which it had herniated. The appendix and uterine adnexa were normal. The diverticulum was resected and the wall of the intestine sutured. As is usual in diverticula of the intestine the muscular layer was absent. Most diverticula of the large intestine occur in the pelvic colon.

MOORE, in discussing Ferey's report, cited a similar case that of a woman thirty years of age who was taken with sudden severe abdominal pain which was especially marked on the right side and was accompanied by vomiting. A temperature of 38.5 degrees F., and tenderness and slight muscular defense at McBurney's point. As the cæcum was being exteriorized an induration the size of half a hazelnut was felt on the antero-external surface 5 cm. above and outside the implantation of the appendix. The appendix was large but apparently normal. The mass was continuous with the intestinal wall, yellowish, and formed by inflammatory fibrolipomatous tissue. In the center there was an orifice communicating with the cavity of the cæcum. Two centimeters above there was a diverticulum the size of a pea which was not infected and had supple walls. After suture of the orifice of the first diverticulum and of the base of the second with the extremity invaginated the anterior and exterior

fascia of the cæcum were sutured together in such a way that the region of the two diverticula was buried. Microscopic examination showed that the diverticula were small hernia of the mucosa through the muscularis. Fluoroscopic examination during convalescence failed to reveal any other diverticula of the colon.

PAGE

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Ravdin, I. S. Some Aspects of Carbohydrate Metabolism in Hepatic Disease. *J. Am. M. Ass.* 1929, xciii, 1103.

Wangensteen, O. H. Complete External Biliary Fistula: A Potential Serious Postoperative Complication. Report of Cases. *J. Am. M. Ass.* 1929, xciii, 1190.

Cattell, R. B. and Klefer, E. D. Failures After Cholecystectomy. *J. Am. M. Ass.* 1929, xciii, 1270.

RAVDIN. The administration of dextrose previous to operation improves the patient's condition and reduces the operative risk. Of equal importance is a high carbohydrate diet or the administration of large amounts of dextrose intravenously after operation, as cell regeneration occurs more quickly and hepatic function improves much earlier when the patient receives large amounts of carbohydrate.

Dextrose in dilute solutions is of more value than dextrose in a 50 per cent solution because being received by the body more slowly, it is more readily utilized and does not have a dehydrating effect which seriously impairs liver function. In dehydrated animals glycogen formation does not take place.

It appears that in cases of obstruction of the common duct insulin is not necessary unless there is evidence of a deficiency of the internal secretion of the pancreas.

Dextrose causes a reduction in the coagulation time of the blood, particularly in jaundiced patients. It has a more marked effect than calcium chloride. In postoperative liver shock it is preferable to epinephrin.

WANGENSTEEN. In the early days of gall bladder surgery a persistent biliary fistula was a common sequela of operation. In 97 per cent of the cases it was due to faulty technique and in 3 per cent to obstruction of the common bile duct. Today it is rare.

Although in a large number of instances patients with total external loss of bile continue in excellent health indicating that in man bile is not essential to life, in some cases the protracted external loss of bile results in a marked loss of weight and strength. In less omnivorous animals than man continued good health can be maintained in the presence of a biliary fistula only by a well regulated diet.

In the presence of a complete irremovable obstruction of the common bile duct internal drainage of the bile is to be preferred to the primary establishment of an external fistula as an external fistula

may not be well tolerated by patients who are poor operative risks

CATTELL and KIEFER Of a series of 548 cases in which cholecystectomy was performed, the results were unsatisfactory in 55 (12 per cent). For the purpose of study the latter were divided into the following three groups: (1) those in which the poor results were due directly to the operative procedure namely, cases of incomplete removal of stones, injury to the common duct postoperative hernia and operative death (2) cases in which the gall bladder disease was associated with a functional colon disorder peptic ulcer achlorhydria, or some other condition producing gastro intestinal symptoms and (3) cases in which the diagnosis was probably incorrect

In the first group the operative mortality was 5.1 per cent. Of 235 patients who were re-examined 6 per cent were found to have a postoperative hernia. One patient required a second operation for the removal of 2 small stones from the common duct.

It is believed that the operative mortality has been greatly reduced during the past two years by better selection of the cases, better operative procedures, the use of spinal anesthesia, and better pre-operative preparation and postoperative care. In the cases treated earlier the unsatisfactory results and the higher operative mortality were due to simultaneously performed extrabiliary operations. Today extrabiliary operations are not done at the time of cholecystectomy. Routine exploration of the common duct has resulted in a 50 per cent increase in the frequency with which common duct stones are discovered.

In cases of the type included in the second group the patient may be led to conclude that the operation on the gall bladder was unsuccessful by symptoms due to the extrabiliary condition. Postoperative hygiene should be applied to all cases in which cholecystectomy has been done. The patients should be warned against acquiring excess weight. Those with achlorhydria should be given hydrochloric acid and those with peptic ulcer or a functional disorder of the colon should receive treatment for the gastric or intestinal condition.

In the third group of cases reviewed most of the operations were performed before the introduction of cholecystography and 50 per cent of the erroneous diagnoses were due to functional disorders of the colon. Non visualization of the gall bladder after either the oral or the intravenous administration of the dye should not be considered conclusive evidence of gall bladder disease when there is clinical or laboratory evidence of a functional disorder of the colon.

The highest incidence of unsatisfactory results follows the removal of non-calculous gall bladders. The patient with chronic cholecystitis should be treated conservatively with a period of medical management directed toward the relief of the stomach and intestinal symptoms.

WILLIAM E. SNACKERON, M.D.

Morrin F. J. Polycystic Disease of the Liver *Irish J. M. Sc.* 1929 68, 666

Multiple non parasitic cysts of the liver are comparatively rare. In infants they are usually associated with congenital deformities and in adults they are often found in association with cysts of the kidneys, pancreas, spleen, and other organs.

The cause of polycystic disease of the liver is unknown, but according to one theory the cysts are due to the inclusion of isolated portions of the wolfian body.

The author reports the cases of two sisters aged thirty five and forty five years. The histories were strikingly similar. Both patients had had attacks of abdominal pain with occasional vomiting and in both an enlarged and nodular liver was palpable. In one case the diagnosis of polycystic disease of the liver was made before operation and at laparotomy numerous bluish green cysts varying in size from that of a walnut to that of a tennis ball were found scattered throughout the substance of the liver. In one case, numerous cysts were discovered also in the pelvis kidney and mesocolon. In one case a portion of the cystic liver was excised and in the other several cysts were aspirated. Both patients made an uneventful recovery.

The fluid obtained from the cysts was clear, slightly straw colored and alkaline. It had a specific gravity of 1.06 and contained urea, cholesterol, and sodium chloride. Microscopic examination showed the cyst walls to be thin and lined by cubical epithelium.

STANLEY H. MEYER, M.D.

Illingworth G. F. W. Cholesterosis of the Gall Bladder *Brit. J. Surg.* 1929 xvii, 203

Cholesterosis of the gall bladder includes the so called strawberry change and also cholesterol polyposis which consists essentially of an infiltration of the epithelium and stroma of the mucous membrane by lipoids and especially by cholesterol. In the stroma a characteristic feature is the presence of large 'foamy' cells of endothelial origin.

Cholesterosis occurs most frequently in middle life. It is usually associated with cholecystitis and often with gall stones. Cholecystography indicates that in uncomplicated cases the concentration of bile and the emptying in response to fats are not affected. In some cases the cholesterol content of the blood is raised but often remains normal. The symptoms are extremely varied. The most rational treatment is cholecystectomy.

The author reports experiments which indicate that in the rabbit cholesterosis may be brought about most readily by the association of a prolonged state of hypercholesterolemia with a mild chronic bacterial cholecystitis, that it does not result simply from the deposit of an excess of cholesterol from the blood but is intimately linked up with the function of the gall bladder with regard to cholesterol. In an experimental investigation of the absorbing function of the gall bladder it was found that the absorption of several other lipoids is easily demonstrable and

that cholesterol is absorbed in an unrecognizable form, its presence in the mucosa being obscured. Absorption of cholesterol from the bile probably occurs only when the cholesterol is present in excess.

The conclusion is drawn that cholesterosis results from two primary changes: first, an increase in the cholesterol content of the bile which leads to the absorption of cholesterol into the mucous membrane of the gall bladder, and second a change in the physical and chemical state of the absorbed or invisible cholesterol which renders it optically active and recognizable and by preventing its transport leads to its accumulation in the gall bladder wall. This change is due most frequently to an inflammation of the gall bladder.

J. FRANK DOUGLASS, M.D.

Cotte, G. Two Stage Operation for Cholelithiasis with Retention of Bile and Angiocholitis. (L'intervention chirurgicale en deux temps chez les lithasiques en rétention biliaire avec angiocholite). *Bull. et mém. Soc. nat. de chir.*, 1929, lv 372.

The advisability of operating in the presence of icterus, especially icterus accompanied by fever, has always been a problem. When drainage by Lyon's method is not feasible, a two stage operation may be considered—first simple drainage, and then, after subsidence of the infection, a radical procedure directed toward the essential lesion. The author reports six cases of cholelithiasis in which a two stage operation was done during acute cholangitis with icterus and a high oscillating temperature.

In the first case that of a woman forty nine years of age, a subserous cholecystectomy was done in the first stage because it happened to be easy and without further exploration a drain was placed in the common duct. The fever and icterus gradually subsided but a roentgenogram showed a stone in the ampulla. The stone was removed at the second operation under the best of conditions. An excellent recovery resulted. Cotte states that in such a case cholecystectomy would ordinarily be associated with excessive risk and it is usually best to do a simple cholecystostomy or incise the gall bladder and cystic duct longitudinally to the common duct.

The second case was that of a woman fifty four years old who was operated upon for an acute infection complicating cholelithiasis of long duration. Nine stones were removed from the gall bladder and six from the common duct through an incision in the cystic duct. Although the common duct was evidently still obstructed the operation was terminated with drainage. Three weeks later after subsidence of the infection, five stones were removed from the lower end of the common duct by mobilization of the duodenum and a cholecystectomy was done. Uneventful recovery resulted.

In the third case, that of a man thirty four years of age, operation showed the liver to be enormously enlarged and indurated. The gall bladder and cystic duct were incised to the common duct and six small stones removed from the latter. The operation was terminated by drainage of the hepatic duct and

famponade. Six weeks later the liver had returned to its normal size but a roentgenogram demonstrated a stone in the common duct. The stone was subsequently removed. The patient died of unrelieved peritonitis.

Case 4 was that of a man sixty four years of age who presented all of the signs and symptoms of subacute cholangitis. A loss of weight of about 40 lb. suggested the presence of a neoplasm. Because of the patient's precarious general condition the gall bladder was drained under local anesthesia. Considerable improvement followed. At a second operation under local anesthesia the common duct was explored and drained. No stones were found. The symptoms of obstruction persisted. A roentgenogram made after the injection of lipiodol showed an inflammatory stricture. Complete cure was finally obtained by choledochoduodenostomy. In a short time the patient gained 30 lb.

The two other cases also demonstrated the rapid subsidence of infection following drainage and the advantages of the author's method of roentgenographing the bile passages.

Cotte believes that if operation is done in two or more stages many patients can be saved who would probably succumb to any but the most simple operation. While it might seem that the second stage would be complicated by the changes left by the first, such is not the case if the interval between the operations is not too greatly prolonged. The adhesions will not be too firmly organized and the drain will serve as a guide to the common duct.

ALBERT F. DE GROOT, M.D.

Deaver, J. B. Causes of Morbidity and Mortality of Operation for Gall Stone Disease. *Surg. Gynec. & Obst.* 1929, xlix 308.

The early stage of gall bladder disease is regarded as a manifestation of a general metabolic disorder in which the liver plays a prominent rôle. It is seen most often in young women coming to operation for symptoms of gall stones after a more or less recent pregnancy. The gall bladder in such patients is usually normal in appearance and the bile is sterile. One of the early manifestations of gall bladder disease is bile stasis. Because of the stasis, bacteria brought to the gall bladder from the liver or the blood stream are not carried off, and infection results. The infection spreads to the liver causing carbuncles and later produces dilatation of the heart and myocardial weakness. This chain of events can be prevented only by early operation on the gall bladder. Medical treatment is prolonged and expensive and its effects are usually only temporary.

In a follow up of patients who were not entirely relieved by cholecystectomy it was found that 50 per cent had had digestive trouble with attacks of gall stone colic for from two to twenty years during which time the disease had involved several organs.

From the surgical point of view the most regrettable cause of postoperative morbidity is failure to remove the diseased gall bladder, drain the common

duct, and determine the patency of the papilla of Vater. Contracture of the papilla by edema, stricture, calculi or tumor may result in back pressure of pancreatic fluid as well as of bile.

Persistence of symptoms and recurrence of stones after cholecystectomy can be traced directly to delay of operation. When changes have occurred in the liver, stomach, pancreas and other organs internal drainage by cholecystoduodenostomy or cholecystogastrostomy may be established, but drainage of the common duct with a T tube is better as stones are likely to recur when the gall bladder is left *in situ*, in spite of anastomosis.

Chronic pylorospasm can be corrected by removal of the anterior half of the pyloric sphincter.

Postoperative adhesions although not uncommon do not play as important a rôle as is often attributed to them. The recurrence of symptoms so often attributed to adhesions is more often due to chronic pylorospasm.

A fistulous communication between the gall bladder and the duodenum or colon ultimately leads to infection of the liver.

The most frequent causes of postoperative morbidity and mortality are local or diffuse hepatic fibrosis, cholangitis and liver abscess.

Stone in the common duct is rarely primary. With few exceptions biliary calculi originate in the gall bladder. Involvement of the common duct is the result of prolonged gall bladder disease.

In the author's clinic, the most common causes of death are cardiovascular disease—acute dilatation, embolism and coronary thrombosis. Most cardiac deaths are those of obese women in whom there is doubtless a deposit of fat about the heart that in most instances is already attacked by myocardial weakness.

Pneumonia stands low in the list of causes of postoperative deaths. This is explained partly by the fact that the operation is performed under intraspinal anesthesia and partly by the fact that diathermy is used. Liver shock is rarely seen by the author, probably because of the preoperative care given and the use of diathermy during the operation.

A cause of death of patients with marked jaundice associated with calculus is undoubtedly the surgeon's failure to perform a preliminary cholecystostomy to decompress the liver.

In the pre-operative preparation of the obese patient weight reduction is important but must not be accomplished too rapidly.

Hæmorrhage is a rare postoperative complication in the author's cases because of adequate preoperative preparation with the intravenous administration of calcium chloride and X-ray irradiation of the spleen.

Primary or operative bleeding is due to insecure ligation of the cystic artery resulting from inadequate exposure or to failure to close the gall bladder bed completely by suture.

In the author's opinion the so called bile peritonitis occasionally given as a cause of death is in

most instances not peritonitis but intraperitoneal leakage of bile.

In conclusion Deaver says that improvement in the morbidity and mortality of operations for gall stone disease is dependent upon early diagnosis and early surgery.

STANLEY H. MENTZER, M.D.

Gibbon J. H. A Review of the Operations Done on the Gall Bladder and Ducts. *Ann Surg* 1929, xc, 367.

Cholecystostomy is often a life saving procedure when other operations upon the biliary tract would carry too great a risk. This is true especially in acute empyema of the gall bladder and in the cases of patients who are old or in poor general condition also when the operator is inexperienced.

Stones probably seldom re-form after cholecystostomy. Those found in secondary operations are usually stones left behind at the first operations. When stones are overlooked, the patient is better off with than without a gall bladder.

Cholecystectomy represents the ideal operation yet the author reports that it was possible in only about 70 per cent of 300 operations on the gall bladder and ducts. It is not without risk because of the disturbances of the biliary circulation that follow. The danger of injury to the common duct in the application of the forceps to the cystic duct or to control bleeding from the cystic artery must be borne in mind. It cannot be said that fewer and less crippling adhesions follow cholecystectomy than cholecystostomy. The number and type of adhesions following either operation are dependent upon the type and severity of the infection.

The author has abandoned closure of the abdominal wall without a soft rubber drain since it is well known that in a small percentage of cases bile leakage occurs after cholecystectomy, either from loosening of the ligature on the cystic duct or from open radicals in the gall bladder bed.

A dilated common duct in the presence of a functioning gall bladder means obstruction and should be opened. It is often better to remove the stone through a transduodenal incision than by passing probes or forceps into the common duct as rough instrumentation is apt to produce injury with subsequent stricture. Anastomoses of the gall bladder to the common duct or stomach although successful and valuable procedures are not without danger because of the possibility of infection as tending from the gastro intestinal tract.

STANLEY H. MENTZER, M.D.

Cotte G. X-Ray Exploration of the Bile Tract with the Injection of Lipiodol After Cholecystectomy or Cholelithotomy (Sur l'exploration radiologique des voies biliaires avec injection de lipiodol après cholelithotomie ou cholécystomie). *Bull et mém Soc nat de chir* 1939, lv, 863.

For the last four years the author has been routinely verifying the permeability of the bile passages after operation by X-ray examination with

the injection of lipiodol through the drainage tube or fistula. When this procedure shows that the obstruction has not been relieved, re-operation can be done without waiting for the development of a persistent fistula, pain or jaundice. The drain serves as a guide to the common duct, and with the information furnished by the roentgenogram the surgeon can proceed directly to the site of the disturbance.

In two cases the postoperative examination revealed calculi in the common duct that had been overlooked. After removal of the stones at a second operation, permeability of the bile passages was demonstrated. The method sometimes reveals lesions of a different nature. In one case in which the jaundice persisted and the stools remained colorless after the removal of a large stone from the common duct, the first roentgenogram showed the entire bile tract to be dilated and the lipiodol to be passing into the duodenum with difficulty, but a second roentgenogram made several days later showed the lipiodol passing more freely. Removal of the drain was followed by rapid recovery. In this case the obstruction was probably due to pancreatitis.

ALBERT F. DE GROIT, M.D.

Whipple A. O. The Surgical Treatment of Bile Typhoid Carriers. *Ann Surg* 1929, xc, 631.

During 1920 and 1921 there were about 150,000 cases of typhoid fever in the United States, with the production of approximately 7,500 typhoid carriers. It has been established that the chronic carrier state arises in most instances in a convalescent. The carrier spreads the bacilli by both urine and feces. The urine carrier state clears up quickly, in only 1 per cent of typhoid cases does the bacilluria continue for as long as two or three months.

Stool carriers may spread their infection for many years. The stool may become infected from the bowel itself, but in the majority of cases the infection arises in the liver or the gall bladder. Typhoid bacilli were found in the feces during convalescence in 21 per cent of 164 cases of typhoid and in 14 cases duodenal intubation cultures revealed the bacilli after 3 consecutive stool cultures had been negative. Garbat has shown that in 15 per cent of carriers cultures of the stools alone fail to reveal the bacilli. Therefore duodenal intubation cultures are even more necessary than stool cultures. It is important to differentiate the intestinal from the bile carrier.

At the present time the New York State Department of Health has a list of 210 active typhoid carriers. Last year alone 20 new carriers were added. One had had typhoid thirty-seven years previously.

No cure for the bile carrier state other than cholecystectomy or drainage of the common duct has been discovered. The author reports the cases of 14 typhoid carriers who were subjected to cholecystectomy or drainage of the common duct or both. Six were operated upon late during convalescence. The remaining 8 had had typhoid fever many months or years previously. Two patients died fol-

lowing the operation, both were deeply jaundiced and had had long standing gall stone disease with cholangitis. The others were cured of the carrier state with the exception of 1 whose duodenal bile still contains typhoid bacilli showing him to be a liver carrier and 1 who was subjected only to cholecystostomy.

If the convalescent becomes a carrier and has symptoms of cholecystitis or cholecystographic evidence of gall bladder disease, the gall bladder should be removed. Gall stones are especially apt to maintain the carrier state as they are porous and permissive to typhoid bacilli and therefore prevent the gall bladder from freeing itself of infection. For the chronic bile carrier surgery is the only treatment offering any possibility of cure. Cholecystectomy is effective in probably 70 per cent of the cases.

Routine cultures of the gall bladder wall, bile and stones should be made after cholecystectomy. Six of the reported carriers were discovered from the findings of such cultures.

STANLEY H. MINTZER, M.D.

Wolfer J. A. Bile Leakage from the Cystic Duct Following Cholecystectomy. An Experimental Study of the Obliteration of the Cystic Duct Stump. *Surg Gynec & Obst* 1929, xlix, 461.

The author followed the changes in the cystic duct stump after cholecystectomy in forty-six dogs. Specimens of the ligated cystic duct were studied grossly and microscopically at intervals of from one to thirty-three days after the operation.

It was found that immediately after the cholecystectomy, the duct stump was covered by an exudate. The stump underwent aseptic necrosis with leucocytic infiltration and partial absorption. The extent of the necrosis depended upon the blood supply remaining to the duct. The more duct that was dissected free proximal to the ligature the farther proximal the necrosis extended. After a few days young connective tissue cells appeared in the exudate about the stump. The exudate became organized and vascularized. The duct stump underwent fibrosis and finally appeared as a mass of scar tissue embedded in the organized exudate.

From the fourth to the sixth day after the operation the duct was very brittle and broke readily at the point of ligation. To determine whether increased intrabiliary pressure might rupture the duct at this point the common duct was cannulated and pressure applied as high as 176 mm Hg. In four instances leakage or rupture of the duct stump was produced between the fourth and ninth postoperative days. In one animal the duct ruptured at the point of ligation when a pressure of 66 mm Hg was applied.

When gauze drains were inserted to the ligated duct and removed on the third postoperative day, it appeared that they either prevented exudate deposit or drained away the exudate about the duct and prevented adjacent structures from covering the duct.

The author concludes that since the cystic duct undergoes aseptic necrosis due to deprivation of its blood supply only a sufficient portion of the duct should be dissected free to establish its identity. A single ligature not too tightly tied, should be placed at the point of contact with undisturbed normal tissues. The organization of the exudate about the duct stump is the important factor in its obliteration. Drainage material leading to the duct stump is undesirable because it interferes with the formation and deposition of the exudate. If a drain is removed at the end of seventy-two hours it is possible for the trauma to rupture the duct which is unprotected by a sleeve of exudate. If a drain is employed it should be placed well away from the duct stump so that it can in no way interfere with the formation of the exudate or with the collapse of the surrounding structures over the duct stump. Drainage is rarely required to care for bile leakage and should be used for that purpose only when the duct wall is very friable or extensively changed by a pathological process. C. W. HAAGENSEN, M.D.

Friend E. Abnormalities of the Bile Ducts Their Vessels and Their Surgical Significance Illinois
Ill J 1929 lvi, 159

The author reviews the variations in the blood supply of the gall bladder and the anomalous ducts reported by Flint, Kerr, Eisendrath and others and discusses the surgical catastrophes that may result from failure to recognize them. The most common blunders committed in primary surgical procedures on the gall bladder are non removal of the diseased viscous because of failure to appreciate its pathological condition, the overlooking of stones in the ducts, injury to the ducts and injury to accessory ducts. If proper exposure is obtained such errors will be avoided.

Flint's statistics show eight deaths from post operative bile leakage during twelve years of biliary surgery. It is probable that in most instances the leakage was due to the division of accessory ducts. The author believes that after the tube has been introduced into the common duct no bile need appear for from twenty-four to thirty-eight hours. He recommends that drainage be established in all cases preferably through a stab wound.

When an accessory duct has been ligated the portion of the liver that it drains does not atrophy as bile can make its way from one group of liver cells to another in the immediate neighborhood. When accessory ducts are cut and not ligated the small ducts gradually close as the result of cicatricial changes.

The author warns against ligation of structures *en masse*.

STANLEY H. MENTZER, M.D.

Deaver J. B. and Burden V. G. Cholangitis
Surg Clin N Am 1929 ix 1020

The authors review the minute anatomy of the bile channels emphasizing the importance of the parietal sacculi and mucous glands in relation to

ductal infections. When the bile channels are infected, the sacculi and glands are likewise involved, a fact which accounts for the seriousness and the long duration of most ductal infections. Since infection spreads from these areas or to these areas from the gall bladder, liver pancreas and other contiguous structures cholangitis is rarely a local lesion. It is usually secondary to gall bladder disease, but may follow systemic infections fevers and ascending infection from a gastro enteritis. If the gall bladder infection includes stones and secondary ductal infection occurs by blockage, the typical signs of cholangitis occur with intermittent chills and fever, persistent jaundice, and stool changes. If surgical intervention is delayed at this stage, pus accumulates within the ducts and liver abscesses occasionally occur. The gravity of the condition becomes proportionately greater as the surgeon's help is withheld.

Clinically, cholangitis occurs in essentially two forms, the acute and the chronic. The former is represented by acute catarrhal and acute suppurative forms. The chronic variety closely resembles hepatitis and biliary cirrhosis. The symptoms are those of infection plus certain peculiar features related to the liver and its infections. In the severe types the prognosis is unfavorable. In chronic forms, there are recurrent attacks of fever, jaundice and enlargement of the liver and the liver presents the appearance of cirrhosis.

The most important factor in the treatment of cholangitis is its surgical management. Therefore the opinion of a surgeon should be sought early. When the condition is acute external drainage of bile should be established by the most direct means. This may be accomplished by cholecystostomy. If there is any doubt as to the possibility of establishing direct external drainage of the common duct by a T tube is best. Internal drainage by cholecystogastrostomy or cholecystoduodenostomy is seldom used because external drainage is preferable in cases of infection. The stoma of the anastomosis does not remain patent when the common duct is not obstructed and the presence of an anastomotic opening may favor the ascent of an infection.

STANLEY H. MENTZER, M.D.

Leveul J. Three Cases of Chronic Pancreatitis with Icterus Treated by Cholecystostomy
 Roentgen Exploration of the Bile Tract After the Injection of Lipiodol (Trois observations de pancréatite chronique avec ictère traitée par la cholecystostomie exploration radiologique des voies biliaires après injection de lipiodol) *Bull et mém Soc nat de chir* 1929 lv 1015

The patients whose cases are reported were women forty-six, twenty-nine and sixty-seven years of age. In the first case the condition was first manifested by a sudden attack of epigastric pain, in the second by fever followed by repeated vomiting, and in the third by the relatively gradual development of digestive disturbances and diarrhoea. A short time

after the initial symptoms icterus began and gradually grew darker with a greenish tinge. The stools became completely colorless. This icterus from retention is not accompanied by fever. The only pain in the author's cases was that experienced by the first patient for twenty-four hours in the beginning. The gall bladder could not be palpated but at operation was found distended. The general condition was seriously affected with resulting marked asthenia and emaciation. Such symptoms might indicate cancer of the head of the pancreas if the youth of some patients presenting them did not argue against such a diagnosis. In the author's second case the signs of attenuated pancreatitis described by Delbet were sought but as the pancreatitis was limited to the head of the pancreas they were not found. In spite of the clinical signs a diagnosis of calculus of the common duct was made because the roentgenogram showed a calculus in the gall bladder.

Leveuf is of the opinion that most surgeons do not pay sufficient attention to the possibility of chronic pancreatitis in cases of icterus. When in course of operation the gall bladder and common duct are found distended without calculi and palpation reveals an indurated nodule in the head of the pancreas the condition is either a cancer of the head of the pancreas or pancreatitis and the bile should be drained. If the gall bladder contains calculi as in the author's second and third cases, it is difficult to be certain that the induration of the pancreas is not caused by a stone impacted in the end of the duct. Incision to determine this point involves the danger of serious hemorrhage. In the author's cases a cholecystostomy was done as the gall bladder was distended. Leveuf emphasizes the diagnostic value of the injection of lipiodol through the fistula when the intrapancreatic part of the common duct is obliterated.

Chronic pancreatitis with icterus has been attributed to infection from cholecystitis. The incidence of stones in the author's cases (two of the three) was the same as that in Brocq's cases of hemorrhagic pancreatitis but it cannot be said that infection was present in the former as the walls of the gall bladder appeared normal and the bile removed during the operation was sterile. Leveuf believes that there are many cases of pancreatitis with icterus which are not due to infection.

Those who think pancreatitis is caused by cholecystitis advocate cholecystectomy with drainage of the hepatic duct but the author believes that when the gall bladder is only distended and its walls are normal it should be preserved whether it contains calculi or not. The chief indication in chronic pancreatitis with icterus when the pathogenesis is doubtful is drainage of the bile. There is some question as to whether this should be done by external cholecystostomy or by derivation into the intestinal tract but the latter procedure is associated with the danger of ascending infection. Leveuf concludes that in benign cases in which a cure can be brought

about by temporary drainage, cholecystostomy should be performed, while in severe cases derivation into the intestinal tract is justified.

In the discussion of this report CUNEO said that he noted that Leveuf had hesitated to perform a cholecystogastrostomy in one of his cases because the bile was colorless and he feared that the gall bladder was isolated from the rest of the bile tract. He called attention to the fact that the bile may regain its color when drainage is established. He stated that Terrier and Poirer performed a cholecystoenterostomy in a case in which the bile was colorless but, as the gall bladder was excluded the operation was of no benefit. Kehr operated later and found induration of the head of the pancreas. The patient died. As autopsy was not performed, it was never known whether the obstruction was caused by cancer. ANDREY G. MORAN, M.D.

Bircher, E. Surgery of the Pancreas (*Die Chirurgie der Bauchspeicheldrüse*). Schöner und Feuchter, 1929. 1640.

The most important conditions of the pancreas from the standpoint of the surgeon and practitioner are pancreatic necrosis, chronic pancreatitis, neoplasms, injuries and cysts. Of these the most common and important is pancreatic necrosis which includes apoplexy of the pancreas and acute and suppurative pancreatitis. In cases that come to operation very early the picture is that of edema of the pancreas and histological examination reveals neither inflammation nor necrosis. Only an enervating effect of the pancreatic secretion on the surface of the gland is to be found. The prognosis of edema of the pancreas is good.

Necrosis of the fatty tissue is caused by the action of the escaping pancreatic ferment upon the steatoma. As the result of transportation of the trypsin containing ferment distant effects may be produced especially in the pericardial and pleural spaces. The mortality is about 63 per cent. An important symptom is the early serous peritonitis. Sometimes sequestra of the pancreatic tissue and abscesses are formed. If no infection follows the necrosis, a cyst may develop. Large sections of the pancreas may be destroyed before diabetes develops. One of the most serious complications is hemorrhage due to digestion of the blood vessels. The etiology has not been definitely settled but the canalicular theory has received most general acceptance. Obstruction leads to retention of the pancreatic secretion the trypsin then becoming activated. The vascular theory is still debated. As a result of the ischemia auto digestion occurs. The experience of the World War showed that necrosis of the pancreas may follow trauma. To cases of traumatic origin belong those in which lesions develop after probing of the common bile duct, the excision of gastric ulcers and ligation of the pedicle of the spleen.

The symptoms of affections of the pancreas are not always the same. However the possibility of pancreatic disease should be considered in cases of

sudden severe pain in the upper part of the abdomen which radiates in all directions and is associated with collapse lowering of the blood pressure cyanosis marked deterioration of the general condition and severe vomiting in spoonful amounts. The diagnosis is aided by the Wohlgemuth reaction.

In the treatment early surgical intervention is indicated. The toxic secretion must be drained outward and ultimately the primary cause (occlusion of the excretory duct) must be corrected. Irrigation of the abdominal cavity with sodium chloride solution postoperative glucose infusions, and the administration of insulin may be beneficial.

Chronic pancreatitis appears in a colicky, dyspeptic, glycosuric, and icteric form. The diagnosis is usually only probable.

Cysts may result from inflammations of the pancreas and traumatic injuries. Exploratory puncture of cysts is strictly contra-indicated as their contents may be of a tryptic nature and their escape into the abdominal cavity may have serious consequences.

The most important tumor of the pancreas is the carcinoma which usually occurs in the head of the organ. The prognosis of pancreatic carcinoma is very unfavorable. Treatment is futile.

Injuries of the pancreas have become more frequent in recent times. The Wohlgemuth reaction is positive after a few hours and a certain diagnostic sign. The best treatment is early operation.

L. LURZ (Z)

Armitage G. Traumatic Rupture of the Spleen Involving the Pedicle Splenectomy Complete Recovery *Brit J Surg* 1929 xviii 335

Armitage reports a case of traumatic rupture of the spleen involving the pedicle which occurred in a boy nineteen years of age during a game of rugby. The abdominal blow causing the rupture was received at 3.30 p.m. and was followed by collapse. After the sensation of being winded had passed the boy complained only of very severe pain in the left shoulder which rendered him unable to move the arm. With the arm in a sling he was taken home in an automobile a distance of fifteen miles. At 6 p.m. he felt well enough to take a street car to visit friends two miles away. At 9 p.m. he suddenly became faint and was again taken home in an automobile. He then became restless and pale and complained of dyspnoea, cold sensations and pain in the shoulder more severe than before. He entered the hospital at 11 p.m. obviously suffering from internal hemorrhage. A diagnosis of rupture of the spleen was made.

After a short period of intensive anti-shock treatment the abdomen was opened. The peritoneal cavity was found full of blood. The spleen was practically free and on manipulation an alarming hemorrhage occurred from its torn pedicle. After some difficulty in securing the pedicle the hemorrhage was controlled. When the abdomen was closed the patient was barely alive.

Immediately after the operation the intravenous administration of saline solution and anti-shock procedures were instituted. After twelve hours the patient's condition was improved. Complete recovery resulted. When the patient was discharged from the hospital at the end of a month his blood count was normal and on re-examination fifteen months later he was found to be perfectly well.

The diagnosis in this case was based chiefly on the pain in the left shoulder (Kehr's sign), the interval without symptoms lasting for five and a half hours which was followed by the sudden onset of shock, and the delayed or reactionary nature of the hemorrhage.

J. EDWIN KIRKPATRICK, M.D.

Chiariello A. G. Gamma's Areas in Siderotic Splenomegaly (Le aree di Gamma e la splenomegalia siderotica) *Ann Ital di chir*, 1929 viii 979

In 1922 and 1923 Gamma reported three cases of splenomegaly in which there was no history of tuberculous syphilis or malaria. On section, the spleen showed areas of compact granulomatous tissue made up of large numbers of connective tissue cells polymorphous cells and giant cells differing from megakaryocytes and Sternberg's cells together with fibers impregnated with iron salts which were undergoing hyaline degeneration and necrosis. These areas are called 'Gamma's areas'. They are not specific lesions as they are found in many forms of splenomegaly. It has been held by some that they are of myeloid origin but this has not been proved. Gamma says they are brought about by retrogression of the connective tissue into vitreous substance. In some cases he has followed up this process. The author regards Gamma's interpretation as the most probable but states that as siderotic splenogranulomatosis has not been demonstrated to be a clinical entity differing from other splenomegalies such as Banti's disease and thrombophlebitic splenomegaly, Gamma's theory that a special form of granulomatosis of the spleen is transformed into siderotic splenomegaly must be confirmed by a greater number of clinical cases before it can be accepted.

AUDREY G. MORGAN, M.D.

Stiven H. E. S. Splenectomy for Egyptian Splenomegaly *Brit J Surg* 1929 xviii 230

Splenomegaly due to bilharzia mansoni is one of the most disabling diseases to which the Egyptian laellahen are prone. During the last nine years the author has performed 390 splenectomies. He emphasizes that the operation is associated with great danger in these cases. His mortality within the first two or three months after the operation is between 13 and 19 per cent. In a follow up of his patients over a period of three years he found that 19.5 per cent had died and 69 per cent reported good results.

The preparation of the patient consists in the administration of carbon tetrachloride in a dose varying from 2 to 4 gm. a full course of intravenous

injections of tartar emetic (0.12 gm. every two days for twelve injections) a course of injections of salvarsan, and a diet with a high vitamin content. This treatment which is continued for about six weeks greatly improves the general health.

The splenectomy is done under spinal anesthesia. It is frequently rendered very difficult by adhesions.

After the operation, fluids are given very sparingly. As a rule the patients leave the hospital after about fifteen days.

J. FRANK DOUGHTY, M.D.

Brin Splenectomy for Splenomegaly with Hemorrhage and Anæmia (*Splénectomie pour splénomégalie accompagnée d'hémorragies et d'anémie résul-tat*) *Bull. et Mém. Soc. nat. de chir.* 1919, 19, 963.

The patient whose case is reported was a woman fifty-seven years of age who had been a cook in a café and had been accustomed to drinking a great deal of wine. About eight years ago she lost her appetite and became fatigued very quickly. In October, 1917, she had a severe attack of hæmaturia which almost proved fatal and on January 10, 1918, she had a second attack.

On her admission to the hospital she was pale, dyspnoic, and anæmic. Her pulse was 85, weak, and unstable. Her abdomen was moderately distended and soft, her spleen very large, quite hard and painful on pressure, and her liver slightly enlarged. Blood examination showed anæmia and a decrease in the leucocytes. The author hesitated between a diagnosis of cirrhotic splenomegaly and myelotic splenomegaly.

Laparotomy revealed a very large spleen with whitish spots of perisplenitis. When the peritoneum was incised a considerable amount of ascitic fluid was discharged. The liver showed spots of glissonitis. The findings suggested cirrhosis, but on account of the splenomegaly the author thought the spleen might have been responsible for the hæmorrhages and removed it. Histological examination of the spleen revealed diffuse sclerosis.

The patient recovered after an attack of pneumonia. Seventeen months after the operation she was in excellent health and able to work long hours without fatigue.

The author does not know the cause of the splenomegaly, but is certain that the splenectomy prevented death from hæmorrhage.

AUDREY G. MORGAN, M.D.

MISCELLANEOUS

Mayo C. H. The Mechanism of Abdominal Pain *Brit. M. J.* 1919, 11, 703.

Mackenzie and Lennander have claimed that pain is felt not in the viscera but only in the overlying structures. Today this view has been practically discarded. The structures in the abdomen are sensitive to pulling, clamping, and tying.

Most abdominal pain that is not due to peritoneal involvement is dependent either on undue contraction of a viscus or on extreme distention. That pain

may be felt also during relaxation of a peristaltic contraction has been shown by the recent work of Iavne and Poulton on the œsophagus.

Even the solid abdominal viscera appear at times to be sensitive to pain.

The parietal peritoneum is innervated mainly by the intercostal nerves. The phrenic nerves innervate not only the diaphragm but also the peritoneum on the under surface of the diaphragm. The sensory fibers in the visceral peritoneum and in the abdominal organs pass back to the spinal cord in association with the sympathetic nerves. The fibers from the stomach, duodenum, cæcum, ascending colon, pancreas, spleen, liver, and gall bladder return with the greater splanchnic nerves, while those from the distal half of the colon go back through the hypogastric and the pelvic nerves.

The splanchnic nerve contains pain fibers. It is doubtful if the vagus nerves have anything to do with the transmission of pain sensations from the abdomen.

Disease in the gall bladder or the liver may be accompanied by severe pain in the shoulder and the side of the neck. This suggests that the phrenic nerve must have something to do with pain in the upper part of the abdomen.

The pains of peptic ulcer and of cholecystitis are not always felt in the same place. This is not surprising when one remembers how many complicating factors there may be.

That our knowledge in regard to the mechanism of abdominal pain is still inadequate has been realized many times by surgeons as they have attempted to relieve the gastric crises of tabes.

There are certain chronic lesions in the abdomen which produce pain of a type that does not fit well into any of the categories just mentioned. As compared with the skin, the abdominal viscera contain very few nerve endings, therefore fairly large areas in these organs must be insensitive.

When the character and site of an abdominal pain tells something to the surgeon, it does so not because he knows much about the underlying anatomy and physiology, but because he has noted that particular pain many times before and remembers what he found when he opened the abdomen.

Rodman J. S. Acute Abdominal Pain Associated with Spinal Cord Shock *Ann. Surg.* 1919, 30, 769.

Rodman states that acute abdominal pain with rigidity is at times associated with injuries to the spinal cord or its nerve roots. He reports two cases.

The first case was that of a man thirty-two years of age who fell 50 ft. from a scaffold landed on his back and supposedly received a blow on the abdomen from a plank. On the patient's admission to the hospital he was in great pain and badly shocked. His temperature was 97.3 degrees F., his pulse 66 and his blood pressure 80-20.

Physical examination revealed tenderness over the lower thoracic and lumbar spine. The patient

was unable to move his legs, and the reflexes were completely absent. Anæsthesia was found up to 6 in below the level of Poupart's ligament and about the rectum. Bloody urine was obtained from the bladder. After six hours the patient had not reacted from the shock and still complained of severe abdominal pain. His temperature remained subnormal, his pulse slow and his blood pressure 80-90. His abdomen was flat, but presented a hoard like rigidity and was tender throughout. The leucocyte count was 10 100.

Because of the abdominal findings an exploratory laparotomy was done under nitrous oxide oxygen anæsthesia. Nothing abnormal was found in the abdominal cavity. The next day the patient vomited at frequent intervals. The vomiting continued for twenty four hours and then stopped. The flaccid paralysis of the lower extremities persisted and there was retention of urine and feces. The tendon reflexes were negative.

X-ray examination showed an injury of the body of the twelfth thoracic vertebra caused by crushing. A decompression of the spinal cord was advised.

Laminectomy performed five days after the patient's admission to the hospital disclosed a fracture of the twelfth thoracic vertebra due to crushing, but no evidence of pressure on the cord or extradural bleeding. When the dura was opened no signs of hæmorrhage, oedema or contusion were found. After the laminectomy there was slight improvement in the symptoms, but the paralysis persisted.

The second case reported was that of a man thirty nine years of age who complained of severe pain in the right hypochondrium after falling from a second story window. Because of the pain and the presence of rigidity, a rupture of the liver was suspected, but within two hours the abdominal symptoms and shock subsided.

Roentgen ray examination showed a fracture of the lateral processes of the third and fourth lumbar vertebra.

Rodman has been unable to find in the literature any other case of severe abdominal pain associated with spinal cord shock which necessitated abdominal exploration. He believes that the pain and muscle rigidity in his first case were due to irritation of the posterior roots by the fracture.

ALTON OCHSNER, M.D.

Higgins G. M. and Graham A. S. Lymphatic Drainage from the Peritoneal Cavity in the Dog. *Arch Surg* 1929 xiv 453.

From this rather cursory survey of the anatomical relations of the lymphatic channels which function in the removal of particulate matter from the peritoneal cavity of the dog it is evident that the thoracic duct plays a relatively insignificant part. In normal dogs particulate graphite injected directly into the peritoneal cavity becomes readily visible in the diaphragmatic lymphatics and the sternal trunks within from ten to twelve minutes, but in dogs in which the respiratory mechanism is disturbed so that the nor-

mal excursion of the diaphragm is somewhat modified the interval between the peritoneal injection and the appearance of the graphite in the sternal lymphatics is greatly prolonged.

The injected graphite is visible in the sternal lymphatic trunks usually long before it can be identified in the cannulated thoracic duct. In one dog of the authors series a more or less rapid appearance of the pigment in the thoracic duct was explained at necropsy when an unusual distribution of the lymphatics of the dorsal portion of the diaphragm was discovered to include major channels which were directly confluent with the thoracic duct. Ordinarily the lymph of the thoracic duct is colored only lightly and then only after prolonged intervals when the lymphocytes within it contain large numbers of the graphite particles, probably phagocytes within the peritoneal cavity. With the animal under ether anæsthesia it is relatively simple to open the median line of the chest in the region of the first or second costal cartilages and thus expose the sternal or thoracic blood vessels. In this way the region may be watched and the first appearance of the black graphite in the clear lymph of the channel may be noted. Preparations made of the lymph coming through these channels show that the graphite contained within it is in the free particulate state, just as it was injected into the peritoneum. On the other hand smears made from the lymph nodes in this region and fixed paraffin sections show that the material is both in the cells and in the free state, the particles having been phagocytized by the large cells of the lymph node.

If in the same animal or in one subjected to the same injection into the peritoneum a cannula is introduced into the thoracic duct in the neck near its venous confluence, samples of lymph may be taken for analysis. Within thirty minutes following the peritoneal injection, darkly colored lymph may be recovered from the thoracic duct in the neck. Analysis shows that the graphite contained therein is partly free and partly in the large lymphocytes. The cells containing the graphite are probably derived from the lymph nodes of the pulmonary, the tracheal or the sternal regions. The particles in the free state have passed directly into the lymph stream from the diaphragm.

By means of insufflation Graham was able to develop a technique whereby the thoracic portion of the thoracic duct could be cannulated and samples of lymph easily collected for analysis of the cellular content. In a number of experiments lymph was collected from the thoracic duct of dogs that had previously received a peritoneal injection of the graphite preparation. The sample taken immediately after the intraperitoneal injection was normal lymph with the usual number of small and large lymphocytes. During the first hour long after the sternal lymphatics were black, there was no evidence of the graphite in either the free state or phagocytic cells, yet there was an apparent increase in the number of large lymphocytes. An hour and a half after

the injection the larger cells of the lymph contained many granules of graphite but the smaller cells were entirely devoid of them. There were no free particles in the lymph stream at this time. Subsequently, with an increase in the number of the large cells small quantities of free graphite appeared in the lymph. Also, at intervals of about two hours following the injection, the larger cells contained the graphite in varying quantities and in many cases the cytoplasmic bodies were literally packed with granules. Analysis of the peritoneal exudate showed masses of cells similar to those recovered from the thoracic duct, which were packed with the graphite material. Unquestionably these cells of the thoracic duct are identical with those in the peritoneal exudate and they had probably entered the cisterna after phagocytosing the graphite in the peritoneal cavity. The particles of graphite which were encountered free in the lymph of the thoracic duct probably entered the duct through the few small channels coming from the dorsal margins of the diaphragm. Samples of blood taken from the femoral artery at this time contained occasional granules of free graphite, together with cells moderately packed with the injected material.

If one is to judge by the degree of physiological activity and the number of lymph channels leading from the diaphragm it is apparent that the lymphatic paths coursing through the pulmonary region are

more effective in removing foreign particles from the diaphragm than the thoracic duct. These channels are not large and are by no means comparable to those which run along the sternum yet they are invariably present on the left side coursing forward through the related mesenteries to the lymph nodes at the base of the lung and usually are identified on the right side although perhaps to a less degree.

In the removal of foreign particulate matter or bacteria from the peritoneal cavity these pulmonary lymphatic routes are perhaps the most significant from the standpoint of pathology. Although they are not directly confluent with pulmonary lymph vessels they join with the latter in the nodes which lie at the base of the lung. In these nodes the lymph draining the two regions mingles and courses forward in the channels of the mediastinum. Accordingly, although direct pulmonary contact with peritoneal drainage is not effected, any disturbance in the flow of lymph coming from the lung which involves stasis or even a retrograde flow could well infect the lung with peritoneal organisms. These observations do not warrant such conclusions for the pigmented lung so often encountered in these experimental animals has of course, other explanations. However the common pulmonary complications which accompany abdominal operations on dogs may have their explanation in the lymphatic association of the two regions.

GYNECOLOGY

UTERUS

Pouliot L. A Safe Technique for the Application of Filhos Caustic (Le Filhos inoffensif) *Rev franç de gynéc. et d'obst.* 1929 xiv 420

Pouliot insists that the poor results so frequently reported from the use of Filhos caustic in the treatment of metritis are due to faulty technique. In the method he employs the cauterization is done on the examining table with the patient in the gynecological position and with the aid of a speculum giving good exposure usually the Collin's speculum. The neo Filhos pencil is used. The prefix "neo" applies only to the shape of the pencil. No preliminary injection of boiled water is made. On the contrary the field is kept as dry as possible. The mucus is expressed from the cervical canal by pinching the cervix between the valves of the speculum and the cervical canal and vaginal walls are then dried with cotton. If the mucus is very abundant and viscid 90 per cent alcohol is employed. A small tampon of absorbent cotton soaked in a neutralizing acetic solution is placed in the posterior cul de sac to protect the vaginal mucosa from the fluid that may ooze from the cervix during the cauterization as this fluid is rich in potassium and calcium and may cause changes resulting later in cervicovaginal adhesions. A Filhos pencil that has been used is more active than an entirely new pencil.

The pencil is introduced into the cervical canal without force sometimes with a screwing movement. On the first occasion it may not penetrate as far as the internal orifice. Pouliot does not begin by treating the ectropion as he believes this to be dangerous. In cases of old and intense metritis he touches the exterior lightly and superficially when he has finished cauterizing the canal. The duration of the cauterization of the cervix cannot be measured in seconds. Sufficient cauterization has been obtained when all of the surface touched by the pencil has become not brown but frankly dark and slightly sanguinolent. This result may be obtained immediately or only after an appreciable lapse of time.

When the external orifice is narrow certain changes must be made in the technique. Under such circumstances the canal itself is not necessarily narrow. Pouliot does not approve of dilatation even with laminaria tents. He uses a tampon of cotton wool proportioned to the diameter of the external orifice and not more than 3 cm long which he moistens with sterile water and then rubs with a Filhos pencil until it assumes a greenish color. He introduces this cotton into the cervical canal and leaves it there until the external orifice has taken on the dark color characteristic of escharification. He watches carefully for the caustic oozing which is

more to be feared than the action of the pencil itself, and is prepared to neutralize it. The cauterization is followed by immediate lavage. From $\frac{3}{4}$ to $\frac{1}{2}$ liter of boiled water is injected the filiform jet entering directly into the cervical cavity. This is done under the control of the eye. The vagina is then dried and a dry dressing applied.

In cases of medium severity from fifteen days to three weeks elapse between the first and second treatments. In light cases the cauterization is not repeated before six weeks.

Of 100 unselected cases 15 required only 1 cauterization, 80 were cured by 2 treatments and 5 required 3 treatments.

Pouliot does not prescribe absolute rest after the treatment but instructs his hospital patients to avoid fatigue during the day. His ambulatory patients he treats late in the afternoon. He prescribes a daily antiseptic injection. For dressings he uses polyvalent bouillon vaccines.

With the technique described he has found Filhos' caustic to be harmless. The original part of his procedure is the immediate lavage.

Pouliot has been able to determine the occurrence of subsequent pregnancies only in his private cases. In the cases of 212 private patients there have been 58 pregnancies. Four are now in progress, 3 terminated prematurely and 51 continued to term.

CARPENTER

Moench G L. The histogenesis of Adenomyositis. *Surg. Gynec. & Obst.* 1929 xiv 332

Adenomyositis, adenomyosis or endometriosis has been ascribed to (1) tissue displaced during embryonic life (a) wolffian, (b) muellerian, (2) tissue displaced after birth, (3) direct invasion from the endometrium or endosalpinx, (4) derivation from the peritoneum (serosal theory of Iwanoff and Meyer), (5) metaplasia of lymph vessels and spaces, (6) metastatic transplantation through the vessels especially the lymph vessels and (7) trans tubal implantation (Sampson).

Ivan Recklinghausen advanced the theory that adenomyomata are derived from the wolffian body but Meyer and Klein later showed that the wolffian body never descends farther than to about the insertion of the round ligament into the cornu of the uterus and adenomyomata below this point were subsequently attributed to changes in the wolffian duct.

Another possible source of misplaced embryonal tissue is the muellerian system. As this tissue has the peculiar ability to react in a special way to the ovary, it appears evident even on the basis of pure logic that displaced muellerian tissue must at times be the source of adenomyositic growths.

After birth it is possible that endometrium may be transplanted traumatically or by tumor growth deep into the myometrium. Inflammation or irritation may cause postnatal epithelial displacements and invaginations with or without metaplasia the resulting adenomyosis being produced by direct invasion of the surrounding structures by mucous tissue with accompanying metaplasia. That such a process is the most usual mode of production of adenomyotic growths of myometrium and that metaplasia of the mucous epithelium is not rare must be admitted without question.

Many investigators have found that the serosa of the abdominal cavity is capable of transformation and of forming invaginations especially on the basis of an inflammatory reaction but also without such a reaction.

The theory of the serosal or colomic histogenesis of adenomyosis has much in its favor. The pictures produced by the invagination of the serosa, with or without accompanying cytogenic stroma have often been described. In the light of our knowledge today, the colomic theory is the only plausible one for certain types of adenomyosis.

Frequently the endothelium of the lymph vessels assumes a cuboidal shape. When such vessels become irregularly surrounded by a lymphoid stroma or an inflammatory area, a picture of adenomyosis may perhaps be simulated. This is true also of the lymph glands in the pelvis.

According to Halbaas's theory, endometrial fragments are transported by the lymph vessels. While it must be granted that pieces of endometrial tissue may perhaps at times be transported and found later in a vessel or space of a laboratory section nevertheless if such a mode of transportation were a true possibility to the production of endometriosis adenomyosis would occur in any part of the body, which is not the case.

Sampson's theory is really two theories—one the traumatic implantation of tissue into various locations following laparotomy and the other, the transubal implantation of endometrium into the peritoneum. For years the possibility of traumatic implantation has been admitted for certain rare cases. Sampson has merely further substantiated this observation. The transubal transportation of endometrium or irritating menstrual blood does not appear logical to Moench as menstrual blood practically never exudes from the fallopian tubes and the tubal lumen is generally far too small for the transportation of fragments of endometrium which have been found in the tubal lumen, even if the possibility of antiperistalsis is admitted. Moreover this endometrium has always been of the interval phase and has been dislocated traumatically. The possibility that such endometrium might reach the peritoneum even if it were viable and advancing up the tube is very slight as the dislocated fragment would probably be caught in the tubal folds under which circumstances endosalpingeal endometriosis would occur more frequently

than peritoneal implantations which is not the case. The explanation offered for this discrepancy is that the tube is not suitable soil. This explanation holds good so far as the direct transformation of the tubal structures into adenomyotic lesions is concerned but is not tenable for cases of simple implantation and the fact that the tube at times reacts is shown by the not infrequent occurrence of salpingitis isthmica nodosa. Moreover although carcinoma cells have been found in the tubal lumen in cases of carcinoma primary in the uterus, Novak has shown that metastases to the ovaries from the uterine cavity are rare and are more easily explained by transportation of the cells by the lymphatic route.

ALBERT M. VOLLMER, M.D.

Bazy and Hilden. Myomectomy Followed by Two Consecutive Pregnancies with Normal Labors. (Myome tomie suivie de deux gestations successives avec accouchements normaux.) *Bull Soc d'obst et de Gynéc de Par* 1929 XLIII 395.

A woman thirty years of age was operated upon for large fibromata of the uterus. As she desired to have children a conservative procedure was attempted. Three tumors were removed—one the size of a small orange from the anterior uterine wall, another the size of a fist from the posterior uterine wall and a third the size of a walnut from the left broad ligament. The cavity of the uterus was not opened. The defects were obliterated by two layers of deep sutures which were in turn covered by a peritoneal suture.

Two months later the patient was pregnant. The pregnancy was terminated by normal labor at term. The next year a second normal pregnancy and labor occurred.

ALBERT F. DE GROOT, M.D.

Hartmanno, Fahre and Duboit-Roquebert. The Treatment of Cancer Developing in the Vaginal Scar Following Total Hysterectomy. (Traitement des cancers développés sur des cicatrices vaginales après hystérectomie totale.) *Gynec et Obst*, 1929 XX 1.

The authors review the twenty six cases of cancer developing in the vaginal scar following total hysterectomy which have been observed in the Cancer Clinic of the Hotel Dieu since 1922. The hysterectomy was done for cancer of the cervix in nineteen cases and for cancer of the corpus, fibromyoma and an unknown condition in two cases each.

In ten cases because of the extent of the recurrence or previous poor response to irradiation no treatment was given. Seventeen cases were treated with radium only. Tubes each containing 10 mgm or 6.66 mgm of radium element with filters of 1 mm of platinum, 1 mm of platinum gold, 0.4 or 0.5 mm of aluminum and 0.5 cm of cork were placed in the vagina so that they covered the ulcerated area and the vaginal dome and were left in place for from four to eight days. Of the seventeen patients so treated, six died of extension of the disease after

from five to eighteen months, one died after six years and four months from a recurrence appearing four years after the first treatment, and ten are at present alive and well from six months to six years and six months after the treatment.

Seven patients were treated by X ray irradiation only. In these cases there was no vaginal ulceration, the recurrence being beneath the mucosa and in the broad ligaments. The oil immersed Coolidge tube was used with 190 kilovolts filtration of from 1.5 to 2 mm. of copper, and a skin target distance of 50 cm. Four portals, one on each side of the median line anteriorly and two posterior parasacral portals were used to give a total of about 24,000 R as measured by the Salomon ionometer. Six patients died after from three to seventeen months and one is alive and well two years after the treatment.

Two patients were treated with both radium and the X rays because they had a recurrence in the vaginal mucosa as well as infiltration in the broad ligaments. One now shows extension of the disease six months after the treatment and the other is living and well after eighteen months.

The authors conclude that neither radium nor X ray therapy is successful in cases of deep ulceration or extensive infiltration of the broad ligaments, but when the ulceration is superficial or there are cauliflower like masses without appreciable deep infiltration radium treatment even without deep X ray irradiation, gives a cure in a considerable percentage of cases. It is therefore important to keep patients subjected to total hysterectomy under observation in order that recurrences may be detected early enough for effective treatment.

C W HAAGENSEN, M D

Keller R. Postoperative Complications Following Radical Hysterectomy for Cancer of the Cervix
(Les complications post-opératoires après l'hystérectomie élargie pour cancer du col utérin) *Gynec et obst* 1929 xv 28

The author discusses postoperative complications of radical hysterectomy on the basis of his experience as director of the Departmental School of Obstetrics at Strassburg. In this institution shock is prevented by general pre operative preparation of the patient, rapid operation and hemostasis as perfect as possible. Operation is postponed if the patient shows the slightest evidence of bronchitis. This precaution has made pulmonary complications a rarity. Peritonitis is prevented by the use of combined vaginal and abdominal drainage according to the Mikulicz method. The vaginal drain is removed last, the communication between the vagina and the operative field being maintained until the danger of abscess formation is past.

Keller does a biopsy but avoids all other pre operative local treatment as he believes it spreads the infection which is always present in foci of cancer. He tried radium irradiation before operation but pelvic peritonitis and pyosalpingitis resulted delaying the operative intervention.

Hæmatoma is usually due to hæmatomata in the bladder wall and is of no consequence. Vesical paralysis due to section of the bladder nerves, is troublesome at first, but does not persist for longer than two or three weeks. Cystitis usually clears up when the in lying catheter can be dispensed with. Pyelitis is more serious and may first become apparent several weeks after operation. Compression of the ureters by scar tissue causes urinary stagnation which results in pyelitis when infection is present. Repeated ureteral catheterization is necessary to prevent later pyonephrosis. When the parametrium is dense and infiltrated and the ureters must be freed by sharp dissection, the ureters are sometimes denuded too closely. A ureter so denuded contracts and becomes hard white and smooth. It may lose its vitality, and a uretero vaginal fistula may result after ten or twelve days.

Rectovaginal fistula which the author has not observed among his own cases, tends to close spontaneously.

Intestinal obstruction is due to adhesions producing kinks. The Mikulicz type of drainage favors the development of adhesions but the rare instances in which the adhesions cause obstruction are more than counterbalanced by the protection they afford against peritonitis. In the author's two cases of obstruction he was able to intervene in time to save the patient's life.

C W HAAGENSEN, M D

ADNEXAL AND PERIUTERINE CONDITIONS

Duval and Ameline. Fourteen Cases of Pyosalpinx with Rupture into the Greater Peritoneal Cavity. Operation. Thirteen Cures. (Quatorze observations de pyosalpinx rompus dans le grand péritoine opération treize guérisons) *Bull et mém Soc nat de chir* 1929 lv 1070

The fourteen cases of pyosalpinx reviewed were seen in a period of five and a half years at Ameline's clinic. The operations were performed by eight surgeons and were done when the patients were in a state of generalized peritonitis in full evolution with free pus in the peritoneal cavity, a temperature of 39 or 40 degrees C and a pulse rate of from 120 to 180. Bacteriological examinations of the peritoneal fluid were not made regularly. As there was only one death the mortality was 7 per cent. Statistics are cited in which the mortality ranged from 32 to 54 per cent. The operations in the authors' cases were performed from six to forty hours after the onset of the acute peritoneal symptoms. In the case with a fatal termination the acute symptoms had probably been present for eight days but their exact duration is not known.

The operation was a unilateral salpingectomy in six cases (including the fatal case), a bilateral salpingectomy in six cases and a subtotal hysterectomy in two cases. Drainage was established in thirteen cases by the insertion of a rubber tube under the pubis and in one case (the case with the fatal termination) by Douglas tamponade. As the

simpler operations gave as good results as the more extensive procedures the authors hold that they are to be preferred

Light of the thirteen surviving patients were recently reexamined All were in good health One had a pregnancy which she carried to term, fourteen months after the operation One was subjected to total hysterectomy two months after unilateral salpingectomy

CARPENTER

Lanman T H Ovarian Tumors in Childhood with a Report of Five Cases England J Med 1929 cli 555

Tumors of the ovary in childhood are very rare In a large percentage of the cases (60 per cent of the author's series) the neoplasm rapidly becomes malignant and even when the diagnosis is made early the prognosis is grave Surgery is the only treatment by which a cure can be obtained In the author's opinion radium and the X ray have not as yet proved of value

Apparently benign tumors of the ovary in childhood should be removed as soon as the diagnosis is made as they may become malignant at any time In cases of obscure abdominal conditions in which a tumor is suspected exploration is justified

Rapidly growing malignant tumors can usually be diagnosed before operation from the clinical picture of rapid loss of weight and other signs of cachexia Even in such cases exploration should be done as it is the only procedure which will definitely establish the diagnosis and there may be some chance of removing the growth

CARL H DAVIS MD

EXTERNAL GENITALIA

Väyrynen S The Results of Treatment of Carcinoma of the Vulva (Ueber die Behandlungsergebnisse bei Carcinoma vulvae) Acta Societatis Med Fennica Duodecim 1929 xiv 286

The author's material includes sixty seven cases Thirty seven of them were treated at the gynecological clinic of the University in Helsingfors during the period from 1904 to 1917 The cases from the clinic of Engstroem in Helsingfors the Laenskrankenhausern (public hospitals) of Turku (Åbo) and Viipuri (Viborg) and the general hospital of Tampere (Tammerfors), thirty cases in all, are discussed in one group

Of the cases of carcinoma of the vulva which have entered the hospitals only a relatively low percentage have been found suitable for radical operation (in the gynecological clinic of Helsingfors about 49 per cent and in the other institutions mentioned, even fewer) Cancer of the vulva can be cured with the aid of radical operation even when the inguinal lymph glands are involved In two of three cases in which there has been freedom from recurrence for more than five years enlarged hardened lymph glands were palpable on both sides While the glands were examined microscopically in only one case, in this instance a definitely carcinomatous

growth was found The results after five four three and two years in cases of vulvar cancer treated in the gynecological clinic are given in the table

Period of observation	Radical operation		Relative cures (all operations)		Absolute cures (all cases treated)	
	Cases	No recurrence	Cases	No recurrence	Cases	No recurrence
Over 5 years	7	3	12	3	17	3
Over 4 years	9	5	14	6	19	6
Over 3 years	9	5	14	6	21	6
Over 2 years	12	7	17	9	25	9

Of the thirty cases from the other hospitals, nine were operated upon more or less radically Eight of the operations were done more than five years ago, but one of the patients could not be traced Of the seven other patients, one is living and well after more than seven years Biopsy before operation in the case of this patient showed carcinoma All of the other patients operated upon radically died within about two years apparently of cancer

The incidence of cure from radical operation will be increased only by the excision of specimens for microscopic examination in suspicious cases and by bringing patients to radical operation as early as possible Local recurrence may develop even ten years after operation Among the cases reviewed by the author there were two such recurrences One of the patients died of cancer eleven years and the other twelve years and four months after the radical operation In histologically proved cases of carcinoma in this material roentgen and radium treatment without preliminary operation and operative removal of the tumor without removal of the regional lymph glands (whether they were enlarged or not) never resulted in permanent cure

VÄYRYNEN (2)

MISCELLANEOUS

Bertrand P and Carcassone F Generalized Acute Gonococcal Peritonitis (Les péritonites aiguës généralisées à gonocoques) Gynec et Obst 1929 xix 371

Gordon was the first to recognize the possibility of the development of venereal peritonitis without symptoms of venereal disease The pathogenic agent is the gonococcus As a rule the portal of entry is the tubes The infection of the peritoneum is the more rapid and the more severe the more abundant and more virulent the micro organism It depends on absolute integrity of the tubes and permeability of their orifices Menstruation coitus intra uterine dressings and the puerperium have been considered predisposing influences but in some cases the condition has developed in the absence of such factors As soon as the abdomen is opened the presence of an acute generalized peritonitis is evident The peritoneum seems to react very feebly to the infect

tion probably because it does not have time to organize its defense. The pus is odorless and in the first few hours is not very abundant. The tubes are red and smooth and free from adhesions. Their mucosa is wine colored and there is considerable submucous oedema.

The syndrome is typical of generalized acute peritonitis. Quite often the pain is localized in the lower part of the abdomen where the contracture begins. Vomiting may occur early. The pulse is rapid and the temperature elevated. The condition may be confused with appendicitis perforated ulcer of the stomach ectopic pregnancy twisted pedicle of an ovarian cyst or acute salpingitis. Vaginal palpation should be done to rule out uterine pregnancy.

As treatment the authors advocate the use of the Mikulicz drain. They report five cases one of them thrown.

PAGE

Fraenkel L. Abdominal and Vaginal Methods of Operation in Obstetrics and Gynecology (Abdominale und vaginale Operationsmethoden in der Geburtshilfe und Gynaekologie) *Monatsschr f Geburtsh* 19 9 LXXXI 79

Fraenkel briefly compares the abdominal and vaginal routes of operation in different conditions.

For most cases of myoma he has given up the vaginal approach for the abdominal approach employing the former only for myomata incarcerated in the lesser pelvis and interfering with labor or showing degeneration. The use of the abdominal route causes less loss of blood an important consideration in the cases of anæmic patients and under certain circumstances allows conservative surgery.

For the removal of an ovarian tumor the abdominal route is indicated. Even when the other ovary is apparently healthy it should be subjected to exploratory ovariectomy in order that centrally located metastases may not be overlooked.

In ectopic pregnancy the vaginal route is preferable only in cases in which a purulent hæmatocele is present.

Fraenkel warns against extension of resorption and irradiation therapy in cases of severe inflammation of the adnexa as rapid healing is often necessary. In this condition the vaginal route should be tried especially when the uterus also should be removed. If difficulty is experienced in the vaginal operation a change may be made to laparotomy. In

cases with marked adhesions and previous perforation of a pyosalpinx only an abdominal operation can be done.

For displacements and prolapse of the uterus no definite rule can be laid down.

For cases of carcinoma, the vaginal route has recently gained importance. In carcinoma of the corpus chorionepithelioma and sarcoma the abdominal route should always be used in order that the friable uterus may be removed intact. For all doubtful cases only laparotomy is to be considered.

In operations for sterility laparotomy is done more often today than formerly as the result of the findings of perflation and salpingography.

In chronic retracting parametritis the author operates by the abdominal route. For the incision of suppurating foci the vaginal route is indicated as the use of the abdominal route is too dangerous.

For urinary fistulae no definite rule can be laid down.

In gynecological diseases the abdominal operation has proved simpler than the vaginal operation. Its technique is easier it gives better exposure, and it is less frequently associated with accidents. However gynecological surgeons must be able to operate by either route.

For the interruption of pregnancy, the abdominal route is being used more and more frequently, but the vaginal route cannot be abandoned. The operations to be considered are hysterotomy or colpotomy and median splitting of the corpus after it has been drawn forward by bullet forceps.

Rupture of the uterus should be approached by the abdominal route.

The surgical treatment of puerperal sepsis is facilitated by abdominal operation.

The question as to the best surgical intervention in labor is disputed more today than ever before. The extension of abdominal section to placenta previa premature separation of the normally implanted placenta frontal presentation and posterior parietal presentation is accepted. Fraenkel does not agree with Hirsch that the indications for cesarean section should be still further widened.

In conclusion Fraenkel states that obstetricians who have learned nothing more of vaginal methods than the classical application of forceps will fail when they are confronted by a serious case of dystocia. Teachers must bear this in mind.

A HEYN (G)

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Harding V J and Van Wyck H B Urobilinuria
in the Vomiting of Pregnancy *J Obst & Gynaec
Brit Emp* 1929 **xxvi** 561

In the treatment of the vomiting of pregnancy it is necessary to consider four factors—starvation, dehydration, hepatic dysfunction and neurosis. The reason for the starvation is obvious. With regard to the dehydration the authors state that it is quite possible that the blood volume has become greatly reduced through blood destruction as well as through loss of water and that the raised serum protein values do not reflect a simple dehydration which can be overcome by the administration of fluids. With regard to the hepatic dysfunction they state that it would appear that an increase in blood destruction and a decrease in liver function would lead to urobilinuria of a degree greater than would be produced by either factor alone, but until experimental proof can be found that dehydration can give rise to urobilinuria by lowering the function of the liver parenchyma the finding of urobilin in the urine in cases of the vomiting of pregnancy may be regarded as evidence of hepatic disturbance of separate origin.

Except in neuroses, treatment by the administration of glucose and fluids is usually sufficient. Occasionally the hepatic function is not restored with or immediately after the correction of the dehydration. In such cases the urobilin in the urine remains constant after the evidences of dehydration have disappeared and recovery is slow. The continued presence of urobilin in the urine is believed to be evidence of a disturbance of function in the liver parenchyma. Accordingly duodenal feedings containing a large number of calories in the form of carbohydrates and with a low protein content are rational.

The urobilinuria which is present in about 80 per cent of cases admitted to the wards of the Toronto General Hospital ordinarily yields to the usual methods of treatment. It is only in the occasional case that the disturbance of the function of the liver parenchyma *per se* is thought to be the chief etiological factor.

GOODRICH C SCHAUFELER M.D.

Solomons B The Symptoms and Diagnosis of
Placenta Praevia *Brit M J* 1929 **ii** 53

Lacey F H The Treatment of Placenta Praevia
Brit M J 1929 **ii** 527

SOLOMONS states that bleeding which occurs in the last three months of pregnancy and is caused by the separation of a placenta situated either wholly or partly in the lower uterine segment should be designated as "unavoidable haemorrhage, and the

placenta should be designated as 'placenta praevia'. This condition can occur only after the twenty eighth week which is the earliest time at which the child may be considered viable. Any haemorrhage occurring between the formation of the placenta and the twenty eighth week of pregnancy must be attributed to miscarriage. Solomons objects to grouping the partial varieties of placenta praevia with the lateral varieties as has been recently suggested.

He explains the placental separation by the assumption that the painless contractions which continue during the entire pregnancy cause a dilatation of the lower segment which is soft and more dilatable than normal during the later months of pregnancy. The placenta does not expand and therefore becomes detached. No doubt, disease of the placenta and irregularities in the capsular development are factors. According to various theories which are reviewed the basic cause of the abnormalities is a fault in the endometrium—a true endometritis or a hyperplastic condition. This assumption has been borne out by curettings taken about two months after the occurrence of placenta praevia.

The chief dangers to the mother from placenta praevia are haemorrhage and sepsis.

At the Rotunda Hospital placenta praevia occurred once in each 283 cases of pregnancy.

With regard to the differential diagnosis of the haemorrhage of placenta praevia from so-called accidental haemorrhage, Solomons states that the former is to be suspected when fresh haemorrhage accompanied by clots but without pain occurs after the twenty eighth week of pregnancy, the fundus is soft and not tender, the presenting part is high and there is a definite uterine souffle.

In a suspected case of placenta praevia vaginal examination should not be attempted until arrangements have been made for any further procedure that may prove necessary as it may cause a serious haemorrhage requiring immediate action. Definite palpation of the placenta should clear the diagnosis. Other conditions to be differentiated besides so-called accidental haemorrhage are excessive show, varicose veins, haemorrhoids and carcinoma polyps and erosion of the cervix.

Placenta praevia is more common in multiparous than primiparous women. It is less often accompanied by toxic symptoms than is accidental haemorrhage. It is not apt to recur.

Solomons follows his diagnosis by the immediate submammary administration of saline solution. He regards this treatment as indispensable to combat possible shock. In the last 55 cases treated by him at the Rotunda Hospital in which it was used there were no maternal deaths.

LACEY gives the results in 562 cases of placenta previa treated at St Mary's Hospital Manchester during the last ten years. Many of the maternal deaths in these cases were due definitely to factors other than the placenta previa.

MATERNAL AND FETAL MORTALITY

	Cases	Maternal deaths No	Per cent	Stillbirths Per cent
Membranes ruptured	126	3	2.3	46
Natural forces	76	2	2.6	30
Version	273	21	7.6	81
External	28	1	3.5	
Internal	228	17	7.4	
Internal and extrac- tion	17	3	17.6	
Breech	21	0		
Cesarean section	33	2	6.0	13
Induction	15	0		70
Weighted vulsellum	11	0		27
Forceps	7	0		

Both Lacey and Solomons warn against the practice of temporizing when once the diagnosis of placenta previa has been made or even seriously suspected. If such a course is to be adopted the patient must be in a hospital where immediate action can be taken in case of serious bleeding. In most cases the uterus should be emptied at once by the best obstetrical procedure possible at the moment.

Lacey states that version has been the most common form of treatment as it may be carried out with only moderate obstetrical knowledge and skill. However the fetal mortality is appalling. Version with immediate extraction has had serious results for the mother as well as for the child. In the series of cases reviewed in which this procedure was used the maternal mortality was 17.6 per cent.

Cesarean section was performed in 33 cases. Eighteen of the women were primiparae; most of them in the last two weeks of pregnancy. In this group the maternal mortality was only 6 per cent and the incidence of stillbirth 13 per cent. Lacey believes that in central placenta previa cesarean section may be performed slightly more frequently especially when the fetus is alive and near full term.

Willis's method of fixing an instrument to the fetal scalp and attaching a small weight has been attended with considerable success in Lacey's cases. In 11 cases in which it was employed there was no maternal mortality and the incidence of stillbirth was 27 per cent. There was no serious injury to the scalp.

GOODRICH C. SCHAUFFLER M.D.

LABOR AND ITS COMPLICATIONS

Jankelawitsch E. J. Cleidotomy on the Living Fetus (Kleidotomie an der lebenden Frucht). *Zentralbl. f. Gynäk.* 1929 p. 1074.

In the case reported by the author the mother was a primipara thirty years of age whose labor pains were weak and could not be strengthened by pituitrin. As the labor was protracted for over sixty

hours, forceps were applied after incisions had been made in the edge of the cervix (which was dilated to three fingerbreadths) and the head was extracted. The cleidotomy was done because the shoulders did not follow through. For this purpose the author used a special scissors which resembles the Richter instrument—an angulated scissors with a cutting surface 9 mm long and a supporting surface which does not allow penetration under the skin for more than 9 mm. The ends of the blades are rounded in order to prevent injury to the mother.

The scissors were introduced under the control of two fingers of the left hand which fixed the clavicle and the bone was divided in its middle third. It was then easy to develop the shoulders and extract the child. The child weighed 4,200 gm. Its length was 55.5 cm, and the width of its shoulders, 14.5 cm. Its shoulder was dressed with a sterile dressing and fixed with a Desault bandage in a suitable position. On the thirteenth day there was callus formation with consolidation of the fragment. By the twenty-fifth day the wound was completely healed. At the end of a month the X ray revealed displacement of the fragments and the clavicle showed shortening of 6 mm, but there was no disturbance of the function of the arm.

By unilateral cleidotomy, the circumference of the shoulder is diminished by from 2.5 to 3 cm, and by bilateral cleidotomy it is diminished by from 5 to 6 cm. The subclavicular bundle of blood vessels and nerves lies deep enough to be safe from injury. In the middle third of the clavicle where the division is done, there is only the insertion of the subclavius muscle. The sites of insertion of more important muscles such as the trapezius, deltoid, pectoralis major and sternocleidomastoid are situated laterally and are not injured.

Nothing can be said as yet with regard to the later function of the extremity after cleidotomy, but judging from the functional results in cases of spontaneous fractures of the clavicle occurring during labor, the author believes that the outlook is good unless marked displacement occurs.

Jankelawitsch recommends cleidotomy in cases in which the shoulders cannot be developed in spite of correct posture. It is associated with less danger of causing rupture of the lower uterine segment and is less drastic for the child than forced extraction by the arms which may result in Klumpke's and Erb's palsy.

KAROTZ (G)

GROSSE A. Should Perineal Lacerations Sustained During Childbirth Be Sutured Immediately? (Doit-on suturer immédiatement les déchirures du périnée survenues au cours de l'accouchement?) *Rev. franç. de gynéc. et d'obst.* 1929 XLV, 401.

Leconte has recently advised against immediate suture of perineal lacerations involving the muscle. The results as he has seen them have been poor. Grosse states that surgeons see chiefly the failures. In the opinion of obstetricians immediate repair is usually successful even in cases of extensive

laceration. The procedure is contra indicated however, by infection devitalized tissues oedematous infiltrated and rigid tissues in obese women and women with albuminuria, and the thick tissues lacking in suppleness of women of lymphatic temperament. The success of immediate suture depends largely on its being done immediately after delivery or within the next few hours. If it is delayed until the following day the chance of a good result is greatly lessened. In complete tears which extend deep into the vagina and especially in complicated tears involving the rectum above the sphincter the patient must be thoroughly anesthetized and the lacerated area well exposed.

The author reports briefly thirty seven personal cases of complete laceration with rupture of the sphincter but without involvement of the recto-vaginal septum. The lacerations were repaired immediately. There was only one failure necessitating a second operation at a later date. In this case there had been marked dystocia the tissues were greatly damaged and the puerperium was febrile. In thirty four cases the result was entirely successful. In one of the two cases in which it was imperfect the puerperium was febrile and in the other there was secondary muscular atrophy.

Grosse reports also nineteen cases with more or less extensive rupture of the rectal wall above the anus and extensive vaginal laceration. In eighteen the result was satisfactory. The one failure occurred in the case of a woman whose tissues were lacking in vitality. In four cases the operation was followed by a fistula, but in three the fistula closed spontaneously and in one it closed following a minor intervention. In three cases in which a successful result was obtained failure seemed probable because of the condition of the tissues the presence of fever in the days following delivery and the patient's general condition. CARPENTER

Laffont and Larribère. A Statistical Study of Uterine Rupture at the Algiers Maternity Hospital in the Period from 1908 to 1928. (Étude statistique de rupture utérine à la Maternité d'Alger 1908-1928) *Bull Soc d'obst et de gynéc de Par* 1929 XVIII 413

During the twenty year period from 1908 to 1928 18 cases of rupture of the uterus were observed among 6 500 patients at the Algiers Maternity Hospital. Nine ruptures occurred among 6 000 European patients and 9 among 500 Algerian patients. The frequency of the accident in the native women is due to the lack of competent attendants the frequent practice of abdominal expression and the fact that the Algerian custom is against calling a physician. Labor in cases of serious dystocia often lasting as long as a week.

The accident occurs most frequently in multiparae about thirty years of age. In the cases reviewed the responsible conditions were as follows:

1 Deformed pelvis. This was the cause in 4 cases all those of primiparae.

2 Abnormal presentation. There were 4 shoulder presentations all in multiparae. 4 breech presentations 3 of which occurred in primiparae and 1 brow presentation.

3 Anomalies of the fetus. In a case of hydrocephalus the abdomen had been compressed for four days.

4 The use of oxytocics. In 1 case quinine was a possible factor. Istiturin was the cause in 2 cases.

5 Obstetrical maneuvers. Abdominal compression was a cause in 1 case version in 5 cases dilatation and extraction in 5 cases, breech extraction in 4 cases forceps delivery, in 3 cases and embryotomy in 3 cases.

The ruptures were usually recognized by vaginal examination after evacuation of the uterus. Sudden violent pain never occurred. In 5 cases there was a flow of blood from the vagina. Uterine inertia was noted only twice. In all cases but 1 there were the classical symptoms of acute anemia.

All treatment other than immediate operation had a mortality of 100 per cent. Of the cases in which hysterectomy was done without drainage recovery resulted in 25 per cent. Since the adoption of Mikulicz drainage hysterectomy has been followed by recovery in 75 per cent of cases.

ALBERT F. DE GROOT M.D.

Grosse. A. Rupture of the Uterus During Labor. Hysterectomy Twelve Hours Later. Recovery. (Rupture utérine au cours de l'accouchement. Hystérectomie douze heures après l'accident. guérison.) *Bull Soc d'obst et de gynéc de Par* 1929 XVIII 402

The case reported was that of a woman who had had five previous labors the third and fifth terminated by high forceps. In the sixth labor the cervix dilated rapidly but there was no tendency for the head to engage. Application of high forceps was unsuccessful. A dead infant of large size was finally delivered by difficult version and extraction. The hemorrhage was profuse and in the course of manual delivery of the placenta a rupture of the uterus was discovered. The patient was then transported for a considerable distance to a hospital where a laparotomy was performed twelve hours after the accident.

The abdomen contained a large amount of blood that came from a tear of the left broad ligament and of the uterus which extended from the cervix to the base of the left tube. There was also a superficial laceration of the sigmoid. A supravaginal hysterectomy was rapidly performed and the sectioned broad ligaments and cervix were closed by a series of mattress sutures to obtain hemostasis. The left uterine artery could not be found. Mikulicz drainage was established. After a stormy two days the patient made an excellent recovery which was interrupted only by a limited phlebitis in the calf of the left leg.

The author ascribes the fortunate outcome of this dubious case to the thorough repair of the peritoneum and the Mikulicz drainage.

ALBERT F. DE GROOT M.D.

PUERPERIUM AND ITS COMPLICATIONS

Kickham C J The Treatment of Puerperal Sepsis *N England J Med* 1929 cci 451

Kickham reviews the various methods that have been proposed for the treatment of puerperal sepsis especially vaccine therapy, serotherapy, intravenous chemotherapy, and hysterectomy and other surgical procedures and reaches the conclusion that none of them has been found of any particular value. He believes that hysterectomy might prove to be life saving in certain carefully selected cases but fears that its universal adoption would lead to a higher mortality than now obtains. He advocates blood transfusion and stresses the importance of a careful selection of donors and the use of this form of treatment early and often. The importance of prophylaxis is emphasized. E L King MD

MISCELLANEOUS

Westman A Experimental Studies Regarding the Functional Importance of the Cells of the Theca Interna (Experimentelle Studien ueber die funktionelle Bedeutung der Theca interna Zellen) *Acta obst et gynec Scand* 1929 viii 290

Westman reports experiments carried out on rabbits to determine whether the theca interna cells

are capable of producing hormones analogous to those originating from the follicular cells. A few hours after coitus, mature follicles were sucked out by the detachment and removal of the membrana granulosa. The undamaged theca interna cells remained *in situ*. The uterine mucosa was then examined with the microscope at definite intervals to determine whether it was the site of a reaction analogous to that occurring under the influence of the corpus luteum in so called pseudopregnancy.

It was found that when the membrana granulosa was completely removed no such reaction took place. Evidently therefore, the theca cells are incapable of producing hormones with an effect similar to that of the hormones produced by the follicular cells.

On microscopic examination of the ovaries it was found that the theca cells had degenerated a short time after extirpation of the follicular membrane.

In one experiment in which the membrana granulosa was removed incompletely a partial corpus luteum formation arose from the remaining follicular cells while the theca cells showed no increased proliferation within those areas of the follicular wall where the granulosa was missing. It is clear from this that the theca cells are incapable of forming corpus luteum tissue.

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rapidly developing severe infections of the upper urinary passages the diseased kidney should be exposed and decapsulated in order that any existing abscesses may be opened. Even in very severe infections the kidney can sometimes be saved by such an operation performed quickly. Sometimes it is necessary to operate bilaterally. After the decapsulation and the escape of the infectious material, the kidney usually recovers very quickly.

A. ROSENBERG (Z)

Klein P. The Treatment of Ureteral Fistulae by Exclusion of the Kidney by X Ray Irradiation (Zur Heilung der Ureterfisteln durch Nieren-ausschaltung mittels Röntgenbestrahlung) *Chirurg* 1929 1 255

The author points out the dangers to the ureter in gynecological operations, particularly when the ureter is moved from its normal position by tumor formations exudates or fluid accumulations or is distorted by neoplastic or inflammatory processes. The consequences of ureteral injury vary depending upon whether the injury is caused by ligation or section and whether it is noticed at the time it is inflicted. When the lesion remains unrecognized, a ureteral fistula develops. Ureteral injury may be corrected by (1) restoration of the continuity of the ureter by removing a ligature or a compressing forceps or resuturing the ureter, (2) implantation of the injured ureter into the bladder or intestine or the ureter on the other side (3) surgical ligation of the ureter or (4) nephrectomy.

Secondary nephrectomy for the cure of ureteral fistula is to be considered only when secondary implantation of the fistulous ureter is hopeless or technically impossible. Secondary implantation is impossible most often in cases of ureteral fistula occurring after the radical Wertheim operation for carcinoma of the uterine cervix. Such fistulae frequently do not develop until quite late, the third or fourth week after the operation. Apparently there is an inflammatory process in the wall of the ureter. Implantation of the ureter into the bladder is contra-indicated by the inflammatory changes in the wall of the ureter, the usually associated catarrh of the bladder and the inflammation in the renal pelvis. Accordingly the only operative procedure possible is nephrectomy.

The author has attempted to treat such fistulae by arresting kidney function by roentgen irradiation. In four cases he closed the fistula successfully by this treatment. After achieving these clinical results he carried out experiments on animals to determine whether the roentgen irradiation affects primarily the vessels or the tubules of the kidney.

Microscopic study of the kidney showed three stages. In the first stage there was a hyperemia with dilatation of the glomeruli and transudation into the capsule. The tubules seemed swollen. In the second stage the hyperemia and dilatation were considerably increased, the glomeruli completely filled Bowman's capsule, the glomerular tufts had

burst and hemorrhage had occurred between the capillary loops. The blood vessels between the medulla and cortex were dilated and there was hemorrhage into the surrounding tissues. The third stage was a stage of contraction. The glomeruli and capsule were smaller and the capsule was thickened and fibrous. The tubules were contracted and throughout the kidney there was new formation of connective tissue.

These experiments therefore showed definitely that the kidneys may be severely damaged by irradiation. The human kidney may be so profoundly affected that its function is destroyed. Accordingly it is possible by intensive irradiation of the kidney to cure ureteral fistulae which otherwise would require an operation for removal of the kidney.

ZILLMER (Z)

BLADDER, URETHRA, AND PENIS

Campbell M F. Rupture of the Bladder. A Clinical Study of Fifty Five Cases. *Surg Gynec & Obst* 1929 xlv 540

During a period of fourteen years at Bellevue Hospital, New York, 55 cases of rupture of the bladder were seen. As in this period more than 300,000 surgical cases were admitted, the incidence of rupture of the bladder was 1 in 5,500. Twenty five of the cases of rupture of the bladder occurred in 166 cases of fracture of the pelvis.

Rupture of the bladder practically never occurs when the bladder is empty. Predisposing causes are distention, alcoholism and mental aberrations. Over 90 per cent of the patients whose cases are reviewed were males.

As a rule the diagnosis is made at operation or autopsy. The condition is strongly suggested by a syndrome including shock, signs of internal hemorrhage, dysuria, hematuria, absolute inability to urinate and tenderness in the region of the bladder. It is suggested also when on catheterization a small amount of bloody urine is withdrawn or far more urine is obtained than was anticipated (drainage of the abdomen filled with urine).

The immediate complications are shock, hemorrhage, peritonitis and fracture of the pelvis and the late complications extravasation of urine, sepsis and vesical fistula. Peritonitis developed in 23 of 37 cases of intraperitoneal rupture reviewed by the author.

Of the fifty five patients whose cases are reviewed 20 survived. All of these were operated upon. They left the hospital after from three weeks to six months. Of the 35 patients who died, 10 were not operated upon and a lived less than ten minutes after their admission to the hospital.

Operation for rupture of the bladder is performed most safely under nitrous-oxide oxygen anesthesia. The peritoneum should be inspected and any urine in the peritoneal cavity should be aspirated or drained. The bladder should be repaired rapidly and drained through a large tube and any peri-

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Donati M. An Attempt to Treat Diabetes by Denervation of One Suprarenal Capsule (Tentativo di trattamento chirurgico del diabete con la denervazione di una capsula surrenale) *Arch Ital Chir* 1929 xxiv 357

Cimantia of the author a clinic demonstrated that experimental pancreatic diabetes in animals can be cured by denervation of the suprarenals. In testing this procedure in a clinical case Donati denervated only one suprarenal capsule the left. He sectioned all of the nerve filaments that enter the gland from above or below, especially all those on the posterior surface and also the filaments which enter the hilus with the vessels. Then in order to be absolutely certain that the denervation was complete he touched the perisuprarenal tissue and the vessels of the hilus with sponges wet with 4 per cent phenol. He admits that this last procedure is open to criticism, but states that it had no apparent unfavorable effects.

The patient was a woman fifty four years of age who had severe diabetes with glycosuria and a fasting glycemia of 285 mgm per 100 ccm. Insulin was given subcutaneously up to as much as 50 units a day. During the insulin treatment, the glycosuria disappeared and the glycemia fell to 124 mgm per 100 ccm, but as soon as the insulin was stopped for a day there was intense glycosuria and the glycemia rose to 180 mgm per 100 ccm.

The left suprarenal was denervated on May 16 1929, and the last dose of insulin before the operation was given on May 14. From May 14 up to May 30 no insulin was given. During this period the patient received the ordinary hospital diet. The usual postoperative increase in the blood sugar was not noted but on the third day the glycemia rose first to 206 and then to 226 mgm per 100 ccm at which level it remained for several days and then fell to 210 mgm while the glycosuria rose to 18 mgm per 100 ccm.

The operative wound healed slowly. In the period from May 31 to June 12 insulin was again given, the doses being decreased from 50 to 10 units. During this time the glycemia fell to 140 mgm per 100 ccm and the glycosuria disappeared. After June 12 the patient received no insulin.

At the time of this report, which was made a month and a half after the operation, the glycemia was 120 mgm per 100 ccm and the urine was free from sugar although the patient was on a diet rich in carbohydrates. The average daily quantity of urine had decreased from 1350 to 450 ccm and the hunger and thirst and other functional symptoms of diabetes had disappeared. The author concludes

from these results that when the elaboration of adrenalin is decreased by denervation of one suprarenal the deficiency of insulin secretion is compensated.

AUDREY G. MORGAN, M.D.

Weiner K. Clinical and Experimental Experiences with Regard to Ascending Infections of the Urinary Passage and the Effect of Decapsulation on These Diseases (Klinische und experimentelle Erfahrungen ueber die ascendierende Infektion der Harnwege und Wirkung der Decapsulation bei diesen Erkrankungen) *Zitsch f urol Chir* 1929 xxvii 1

After lymph tracts with efferent branches coursing in the adventitia were demonstrated by Teichmann and Krause in the wall of the ureter Lehnhorff demonstrated them in the ureteral mucous membrane. Three parts can be distinguished in the ureter. In the lowest part the lymphatics are connected with the lymphatics of the bladder and lead to the hypogastric glands. In the middle part the lymphatics take their course to the glands of the aorta and cava vena and especially to the common iliacs. In the upper part some of the lymphatics are connected with the lymphatics of the renal pelvis and the kidney and others course to the glands of the aorta and cava vena. According to Bauereisen the lymphatics of the wall of the ureter are connected with one another in the longitudinal direction and a lymph stream runs from the mucous membrane to the adventitia. According to Stahr the lymphatics of the renal capsule are connected with those of the renal cortex where they form a dense network. From the cortex pigments injected into the lymphatics penetrate between the canaliculi. It has not been determined definitely whether they pass by way of the pyramids of Ferrein or along the arteries.

The lymphatics of the submucosa of the renal pelvis gain entrance to the renal parenchyma at the folds of the calyces. The circle is therefore completed as the lymphatics of the upper portion of the ureter are connected with the lymphatics of the renal pelvis.

The author reports four cases of ascending infection. As in one of them the ureter was stenosed and in all of them renal abscesses and not pyonephrosis resulted the infection was not in the renal pelvis or along the free lumen of the urinary passage but had ascended by some other route. By histological studies the author found it had ascended not only along the lymphatics of the ureter but also along the wall of the bladder where it had apparently originated in the region of the ureteral meatus.

Weiner's investigations have shown that infections can travel upward very rapidly. This observation is of great therapeutic importance. In

circumferential appearance. Microscopic examination showed it to be a sarcomatoid rhabdomyoma with marked variations in the cell picture. Fourteen months after the operation the child was still free from recurrence and metastases. PUELL (Z)

Schreiner B F The Treatment of Epithelioma of the Penis Based on a Study of Sixty Cases
Radiology 1929 xiii 353

In the diagnosis of epithelioma of the penis syphilis and venereal warts must be ruled out. It is generally believed that all papillary growths on the glans penis are potentially malignant. As a rule local extension of epithelioma of the penis occurs relatively late but eventually there is invasion of the lymph channels. In the majority of cases the inguinal nodes are involved when the patient first seeks treatment and in over 75 per cent of these cases the involvement is bilateral.

The most common site of epithelioma of the penis is on the glans. As a rule the course of the disease is relatively slow until it reaches the critical stage. Patients have been known to live eleven years with out surgical treatment. Recurrence is usually observed during the first year after operation but cases have been seen in which it did not develop until after eight years. In forty one of the sixty cases reviewed by the author the duration of the lesion ranged from six months to one year. In the others there was a history of ulceration of warty growths over a period ranging from two to fourteen years.

The treatment which the patients had received before they consulted the author included cauterization, the application of ointment, X ray irradiation, radium irradiation and partial and radical operation. Schreiner classifies the cases into two groups. Group 1 was made up of twenty three cases in which the lesion was confined to the penis and Group 2 of thirty seven cases in which there were definite metastases in the lymph bearing areas of the groins.

In the first group unfiltered X ray irradiation alone effected a cure which in two cases has lasted for ten years and eight and a half years respectively. One patient who was treated by the implantation of radium in the lesion is still well today (three and a half years later). Unfiltered X ray irradiation of the local lesion with high voltage X ray irradiation over the groins and partial operation resulted in healing which has persisted for seven years in two cases for ten months in one case and for eight months in two cases. Of eleven patients subjected to radical operation and irradiation six are living eleven, seven, five, three, one and one years respectively after the treatment. Three died as the result of the operation, one died six years after the operation from another cause and one died of internal metastasis after two years.

In the second group unfiltered X ray irradiation or the implantation of radium in the primary lesion together with high voltage X ray irradiation over the groins resulted in healing or great improvement in the primary lesion but most of the patients so

treated died from their metastases. In one case the implantation of radium into the lesion with removal of metastatic nodes and the implantation of radium in the groin resulted in healing which has persisted for five years. Of eight patients subjected to radical operation and irradiation one was clinically cured for thirteen and a half years. The others died after from two months to one and a half years.

JOHN F O'NEIL M D

GENITAL ORGANS

Bugbee H G Cases of Unsuspected Carcinoma of the Prostate Discovered on Microscopic Section
J Urol 1909 xii 363

Smith G R Total Perineal Prostatectomy for Cancer
J Urol 1929 xiii 377

BUGBEE reports seven cases of prostatic carcinoma in which the findings did not agree with the often repeated statement that most prostatic carcinomata have their origin in the posterior lobe and that a cancer beginning in this lobe extends in an upward course along the posterior pelvic chain of lymphatics and early extends beyond the prostate.

The carcinoma was first discovered in Bugbee's cases at pathological examination subsequent to prostatectomy. In six areas of malignancy were found in a lateral lobe or the median lobe. In all the carcinoma was surrounded by adenomatous hypertrophy but evidence of recurrence has been observed in only one. In none is there any sign of metastasis. In all the urinary function is normal.

Three of the patients stated that their father or mother had died of carcinoma. The ages of the patients—fifty five, sixty one, sixty two, sixty nine, seventy one, seventy four and eighty—correspond to the ages in most series of cases of prostatic hypertrophy.

Five of the patients had retention of urine within a few days after they entered the hospital. Two of these five had had urinary symptoms for only six months and one had had such symptoms for only seven months before the development of the retention. One had had difficulty in urination for fifteen years and another for nine years. The sudden onset of the retention after a comparatively short period of urinary disturbance or after a long period free from exacerbations may be suggestive of the transition of a benign into a malignant growth.

Difficulty in urination was a more prominent sign than dysuria. Two patients had nocturnal incontinence and large amounts of residual urine. Hematuria did not occur in any case. Three patients were free from infection but four showed chronic infection of the prostate, seminal vesicles and bladder.

Convalescence following prostatectomy was just as rapid as in cases of simple hypertrophy.

The author draws the following conclusions:

1. In the lateral and median lobes of the prostate small carcinomata occur which may be diagnosed only on microscopic section after removal. A more careful study of all prostates may make it possible

vesical hæmatomata or extravasations should be well drained

MAURICE I. MELTZER MD

Werboff S. Experiences and Results in the Treatment of Vesical Calculus (Erfahrungen und Resultate der Blasensteinbehandlung) *Ztschr f Urol* 1929 XVIII 661

The author agrees with Casper that lithotripsy is the best operation for vesical calculi. At the Casper clinic lithotripsy was done in 300 cases and the stone was removed by the suprapubic route 40 times. If the urethra will not allow the passage of the instrument it may be dilated with bougies. Insurmountable difficulties are encountered only in cases of hypertrophy of the prostate. A markedly protruding prostate often does not allow the lithotriptor sufficient play to grasp a stone lying behind the prostate. In some cases of prostatic hypertrophy the instrument cannot be pushed through the narrowed prostatic urethra. When the stone has a diameter of more than 4 or 5 cm it cannot be grasped by the blades of the lithotriptor and when it is too hard it cannot be broken up. Multiple small stones cause difficulty, and multiple large stones constitute a contra-indication to lithotripsy. Severe general infections, acute urinary infections and severe diabetes are also strict contra-indications although the importance of diabetes has been considerably reduced by intensive insulin therapy. In the cases of children it is nearly always necessary to perform lithotomy. This may account for the fact that lithotomy was done in 10.3 per cent of the cases reported by Werboff whereas it was done in only 6 of 302 cases reported by Schilling in 1904, 4 per cent of cases reviewed by Loewenbart and in only 2 per cent of those reported by Frener.

The proper preparation of the patient previous to lithotripsy is of the greatest importance. Patients with chronic catarrh of the bladder should be subjected to a general course of disinfection. Even to those without demonstrable inflammation of the bladder, the author administers urinary disinfectants by mouth for one or two days previous to the operation. Before every lithotripsy the position of the stone and its relationship to the prostate and a possible diverticulum of the bladder should be determined by cystoscopic examination.

The type of anesthesia is of great importance. As the instillation of a 2 per cent alypin even in a quantity of 100 ccm is not sufficient the author recommends spinal anesthesia induced with tpmococaine. For the removal of small stones paracocaine or epidural anesthesia is usually satisfactory. The bladder must not be overdistended as a rule from 100 to 150 ccm is the proper amount of filling. When the stones are large the evacuating catheter should be used after they have been crushed and then the ramasseur. The cystoscopic examination should then be repeated to determine whether any injury has been done and after this examination the bladder should be irrigated with silver nitrate solution. Medium sized stones and

even large stones may be reduced in size by snapping off fragments with Young's forceps.

When the stone debris collects between the blades of the lithotripsy so that the blades cannot be completely closed it may be dislodged by striking the blades of the instrument together sharply. Hæmaturia if it occurs must not be allowed to continue longer than twenty-four hours. In prostatic hæmorrhage may occur in the posterior urethra but this is without serious consequences if it is stopped by the use of a retention catheter. Epididymitis may also develop but is usually prevented by rest in bed for two or three days. The administration of an abundance of fluids and of urinary disinfectants by mouth washes and disinfects the bladder.

The chief danger of lithotripsy is dissemination of the infection to the upper urinary passages. This danger is especially great in patients with prostatic hypertrophy and insufficient emptying of the bladder.

Of the 6 patients who died in the series of case reviewed by the author 3 developed first an ascending and then a generalized sepsis, 1 had lues with paralysis of the bladder, 1 died from chloroform anesthesia and 1 died from suppuration of the contents of a diverticulum of the bladder after operation. (A. ROSENBERG (Z))

Pohl H. Sarcoma of the Urethra. Report of a Case of Myosarcoma (Zur Kenntnis der Sarkome der Harnroehre. Mitteilung eines Falles von Myosarcom.) *Ztschr f Urol* 1929 XVIII 533

Sarcomata of the urethra are rare. Only twenty-four cases have been reported in the literature. They occur much less frequently than the epithelial neoplasms with which they have certain common characteristics as regards etiology and clinical features. Their development at an early age which has been mentioned as characteristic is not diagnostic as only five of the patients whose cases are on record were less than thirty years of age and thirteen were more than fifty years of age. The majority were females. According to their histological structure the tumors may be classed as round cell sarcomata, lymphosarcomata, melanosarcomata, fibrosarcomata and their subvarieties. Chronic inflammatory irritative conditions of the urethra are believed to play a part in their origin but the author reports a case of myosarcoma which was a typical example of a congenital germinal tumor growth.

The author's patient was a boy eight weeks old who had had anuria for forty-eight hours. The tensely filled bladder was palpable in the hypogastrium as a spherical tumor. The perineum in the region of the urethra was bulged outward by a urethral tumor the size of a walnut which could be clearly felt on all sides. The tumor was removed through the perineum the stump of the urethra then being united by suture over a catheter. Rapid recovery followed. The tumor measured 3.5 by 3 by 4 cm. Its cut surface showed muscular fibrous structures with the inclusion of circular foci having a

taken with a sudden intense pain in the right groin and the right side of the scrotum. The scrotum at once increased in size and became heavy. The pain irradiated the length of the cord. Rest in bed caused no improvement. Four days after the beginning of the pain a scrotal swelling the size of a large duck egg developed on the right side with oedema and wine red coloration of the skin. The pain was most severe in the epididymotesticular groove. The cord and epididymis were thickened and the tunica vaginalis testis contained a layer of fluid. The testicle itself was unchanged. The inguinal rings were widened and gaping on both sides but there was no trace of hernia. The general condition was good. The usual treatment of orchid epididymitis brought no relief.

An inguinoscrotal incision revealed a congested cord which had exteriorized the testicle without torsion. When the tunica vaginalis testis was opened a citron colored fluid escaped and the walls were found lined by false membranes. There was a single sessile hydatid of Morgagni of normal aspect. On the external side in the epididymotesticular cul de sac among the thicker and more adherent false

membranes there was a blackish turgescient pyriform mass the size of a large kidney bean. This was attached to the epidermis only by its smaller extremity which formed a pedicle. There was no torsion. The small tumor was ligated and resected, and the thickened and bleeding tunica vaginalis testis was excised. To effect hæmostasis the raw edge was whip stitched. On microscopic examination the tumor was diagnosed as a vas aberrans of Haller or a para epididymal cyst. Solier and Huard believe it was a vas aberrans of the rete testis such as was described by Roth in 1876 and by Poirier in 1890, which detaches itself from the rete testis.

MOUCHET, who read their report before the Society, suggested that the necrobiosis of the embryonal rest may have been due to a torsion not discovered. He emphasized that whenever the syndrome described cannot be attributed to a urethral infection or a general disease operation must be performed. Operation will effect an immediate cure and when there is torsion of the cord with attenuated symptoms it will save the testicle. In any case it will prevent such sequelæ as serous or hæmorrhagic vaginalitis.

PAGE

to detect small suspicious areas which would lead to prostatectomy in cases in which palliative measures might otherwise be continued

2 The sudden onset of retention in the presence of comparatively mild urinary symptoms may be suggestive of malignancy

3 Prostatectomy may be carried out quite as easily in cases of the small carcinomata described as in cases of simple hypertrophy. Preliminary supra pubic drainage to allow subsidence of the oedema and infection is an advantage

4 There is no evidence suggesting that the small amount of trauma incident to the removal of the prostate causes a squeezing out of cancer cells into the lymphatics with consequent spread of the disease

SMITH reports the results obtained in twenty six cases of cancer of the prostate by total perineal prostatectomy. In this operation the prostate and vesicles are exposed by means of an inverted U incision the entire prostate including its capsule a more or less wide zone of the bladder neck and most or all of the seminal vesicles are removed and the hiatus so made is closed by careful suture of the bladder neck to the stump of the urethra just proximal to the posterior layer of the triangular ligament

Young drains the bladder only by a urethral catheter but Smith establishes drainage also by means of a tube inserted through a stab wound made just above the trigone as he has found that when this is done healing occurs more quickly

With regard to the indications for total perineal prostatectomy, Smith states that the patient's condition must be such that he can stand an operation with a duration of at least ninety minutes. The use of spinal anaesthesia increases the margin of safety considerably but the circulatory system must have a fair measure of reserve. The existence of metastases which would probably prove fatal within a year is a contra indication. Digital examination and cystoscopy must show that the carcinoma has not extended any farther than the vesicles posteriorly and that it has not invaded the bladder wall except on the trigone close to the prostate where it may be removed without interfering with the ureters. On rectal examination the finger should be able to outline the prostate laterally and reach the upper edge of the indurated area with ease

The ages of Smith's patients ranged from fifty to eighty four years. Urinary obstruction had been present for one year or less in eighteen cases for from one to two years in four cases and for from two to three years in four cases. The amount of residual urine at the time the patient entered the hospital ranged from none in three cases to complete retention in seven cases

The duration of the symptoms and the amount of obstruction are not an index of the extent of the carcinoma. In many of the cases reported the obstruction was due to hypertrophy occurring in the lateral lobes and not to the carcinoma

In the cases of patients with residual urine, drainage was established by catheter until the renal func-

tion and the general condition were satisfactory. In the earlier cases the type of anaesthesia varied but lately spinal anaesthesia has been used almost without exception

The operation does not produce much more shock than an ordinary prostatectomy. In the cases reviewed there were three deaths in the hospital. One of the twenty three patients who recovered developed a recto urethroperineal fistula following radiation. The twenty two others remained in the hospital for an average of thirty two days after the operation. Smith usually leaves the urethral catheter in place until the perineum is well healed

Control of urination is often rather slow in returning. It may be greatly improved by dilating the point of union of the bladder with the urethra with sounds

One of the author's patients was operated upon too recently to be included in a discussion of the results. Three had no control after the operation. One of the latter was suffering from tabes dorsalis and one was a mental defective who had dribbled constantly before the removal of the prostate. The third was operated upon some time ago at the Massachusetts General Hospital. Smith is unable to account for the lack of control in this case except on the ground that recovery is usually not as quick or as complete in hospital cases as in private cases

Eight patients died of cancer after leaving the hospital. Of these one lived five years and nine months and was bedridden for two years. Two lived two years and two months. One lived one year and six months. Three lived one year, and one lived three months. None of these patients, so far as can be ascertained, developed urinary obstruction or any important vesical symptoms. JONAS P. O'NEIL, M.D.

HUNT V. G. Carcinoma of the Prostate Gland and Prostatic Capsule Developing Subsequent to Prostatectomy for Benign Prostatic Hypertrophy. *J Urol* 1929 xxi 351

In the case reported definitely encapsulated benign adenomatous hypertrophy was present in association with carcinoma. The gland was readily enucleated and careful section failed to show any evidence of a malignant condition. However microscopic examination of tissue removed from the prostatic capsule at autopsy disclosed definite carcinoma. The author states that if the patient had lived and clinical manifestations of a malignant process had appeared at a sufficiently later time it might have been suspected that this was a true example of malignancy developing in the prostate gland and prostatic capsule subsequent to prostatectomy for benign adenomatous hypertrophy

SOLLER L. F. and HUARD P. Subacute Orchitis Caused by Necrobiosis of a Vas Aberrans (Orchite subaiguë par nécrobiose d'un vas aberrant). *Bull et mém Soc nat de chir* 19 9 17 732

The case reported was that of a man thirty-six years of age who while ascending a stairway was

The author concludes from his studies that Le Double's first and second degrees of sacralization which were found in 75 per cent of the persons examined are normal forms whereas the fourth fifth and sixth degrees may cause deviations of the spine, contractures and pain.

From the roentgenological point of view pathological sacralization is characterized by a very greatly enlarged transverse apophysis in contact with either the sacrum or the iliac bone. Unilateral sacralization is frequently the cause of a deviation of the spine (scoliosis).

The clinical picture of sacralization is essentially that described by Bertolotti and Rossi except that as a rule there is no muscular atrophy and cutaneous sensibility remains intact. In all probability the asymmetrical fixation of the spine to the pelvis is responsible for the pain and contractures.

Resection of the asymmetrical and hypertrophied transverse apophysis was followed by cessation of the pain in cases reported by Adams Van Neck, Kleinschmidt, Nove Jossierand and Maclaure. Also in the cases of two women with unilateral sacralization in which this operation was performed by the author it resulted in a prompt and definite cure of the contractures and pain.

SURGERY OF THE BONES, JOINTS, MUSCLES TENDONS ETC

Tuffier. Bolting the Joint in Osteo Arthritis (Essai sur l'enchevêtrement articulaire dans les ostéo arthrites). *Presse méd* 1ar 1929 xxxix 959

Tuffier says that he has never performed the Robertson Lavalle operation. His object in bolting the ends of the joint with fragments of bone is simply direct immobilization of the joint. Under general or local anesthesia he perforates the two joint ends in the direction most favorable for their perfect immobilization and in the best attitude for ankylosis and then cuts a fragment from the crest of the tibia of the right length to transmit the ends of the bones. He drives one two or three of the fragments into the perforations in the bone cuts them off level with the surface of the bone and closes the skin with two hooks. After the operation the limb is immobilized in a plaster cast for from six to eight weeks.

Tuffier emphasizes that a roentgenogram should be taken of the joint in order that perforation of a focus of tuberculosis may be avoided and that care should be taken not to bore through a dead space such as the intercondyloid space.

Tuffier has performed ten operations for tuberculosis of the bones and joints in this way—four on the sacro iliac joint, four on the knee and two on the tibiotarsal joint. He had no operative mortality. In one of the two cases of operation on the tibiotarsal joint recovery resulted without complications but in the other it was complicated by an infection from a generalized furunculosis. In three of the four cases in which the knee joint was treated

resection finally became necessary, but in one the first operation resulted in a permanent cure. Of the three cases of operation on the sacro iliac joint good results were obtained in two. In one of these the result was so remarkable that Tuffier thought he might have made a mistake in the diagnosis. One patient operated upon for sacro iliac tuberculosis was not helped by the operation at all. The tuberculosis had not opened externally in any of these cases but two of the patients had cold abscesses.

The ten cases are reported in detail.

AUDREY G. MORGAN M.D.

Wheeler Sir W. I. de C. The Role of Operative Treatment in Tuberculosis of the Large Joints. *Irish J. M. Sc.* 1906 6 5 649

In the cases of children with tuberculous joints radical operation should be avoided and conservative operations are to be considered only when general conservative treatment fails or is followed by recurrence. In the cases of adults operation should be preceded and followed by open air treatment. The ideal to be attained is either a painless movable joint or a firm bony ankylosis.

The belief that the tubercle bacilli cannot be found in the tuberculous pus is erroneous as their presence can be demonstrated by diligent search. They have been discovered also in the urine of persons with tuberculosis of the bones and joints. Their presence in the urine indicates a tuberculous focus in the urinary tract. This focus heals coincidentally with the healing of the bone lesion.

Following a discussion of the various operations on the different joints the author draws the following conclusions:

1. In the treatment of the hip and knee which have been ankylosed by a tuberculous lesion which has healed arthroplasty has a limited field of usefulness.

2. In cases of relapsed and prolonged tuberculosis of the hip extra articular fixation has given satisfactory results.

3. In the cases of adults with well established disease of the knee, excision of the knee is the only successful treatment.

4. Before amputation of the foot is attempted astragalectomy or removal of the os calcis or both should be tried. In the cases of children astragalectomy is indicated when conservative treatment has failed.

5. In tuberculosis of the elbow excision gives the best results.

A. GOTTLIEB M.D.

Hodgson N. Volkmann's Ischemic Contracture Treated by Transplantation of the Internal Epicondyle. *Brit J. Surg.* 1929 xvii 317

Following the method described by Bailey in the October 1928 issue of the *British Journal of Surgery* the author transferred the inner epicondyle with the attached flexor muscles downward on the ulna in a typical case of Volkmann's contracture which had not responded to conservative treatment. The immediate result of the operation was not highly

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Garnett J B and Case E A A Clinical and Pathological Discussion of So Called Subacromial Bursitis *Surg Clin N Am* 19 9 11 1107

In fifty cases of subacromial bursitis the author was unable to detect any pathological changes in the bursa itself but discovered a calcareous deposit on or under the supraspinatus tendon. He states that the symptoms ascribed to bursitis are in reality due to a lesion of the tendon of the supraspinatus muscle whether a calcareous deposit is present or not. As the clinical picture differs little in cases with and without calcareous deposits the underlying lesion is presumably the same in both viz an inflammation of the supraspinatus tendon.

The common cause of the lesion is occupational trauma and not a single injury. The condition occurs most frequently in persons who work with their hands while holding the elbows away from the chest. In this position of the arm the tendon is bruised or pinched between the greater tuberosity and the acromion of the coraco acromial ligament.

The symptoms vary with the severity and the stage of the lesion. In the acute cases the pain is felt along the distribution of the brachial plexus. It may extend from the neck to the finger tips or may be restricted to an area in the arm or in the arm and forearm. The area immediately overlying the bursa is usually not painful. Motion is restricted because of the pain and muscle spasm. Abduction and inward rotation are affected most. An area of maximal tenderness will always be found at the edge of the acromion process and greater tuberosity. When a calcareous deposit is present its position corresponds to the site of greatest tenderness. The pain may last from three to five weeks and then cease or the condition may become chronic with milder symptoms lasting for months or years. In chronic cases there is some restriction of motion due to habit contractions from prolonged disuse of the full range of rotation during periods of severe pain.

In all cases of bursitis without calcareous deposits the treatment should be conservative. Even in the great majority of those with calcareous deposits the deposits undergo spontaneous absorption in the course of a few weeks under conservative therapy. The symptoms usually cease when the absorption is complete but in some cases the pain may recur mildly for a year or longer after the deposit is gone.

In recent acute cases operation causes immediate cessation of the symptoms. In chronic cases such a rapid cure is not to be expected probably because the deposit cannot be as thoroughly removed.

A GOTTIEB M D

Panner H J A Peculiar Affection of the Caputulum Humeri Resembling Calvé Perthes Disease of the Hip *Acta radiol* 1919 x 234

The author reports three cases of an elbow affection the origin of which was immediately related to a definite trauma. The patients were boys ten years of age or younger.

The clinical symptoms of the condition are mild consisting only in minor functional disturbances. Undoubtedly complete restitution to normal occurs eventually but the course of the disease is long—three years or more.

The roentgen picture is typical. Only the caputulum humeri is affected. At first there are only slight rarefactions resembling fissures together with a certain blurring of the structural design. Later the osseous center becomes diminished its contour indistinct and its nucleus much divided the picture as a whole resembling that of the osseous center of the head of the femur in Calvé Perthes disease. Eventually the osseous center gradually resumes its normal shape and appearance.

The affection undoubtedly belongs to the same group as Calvé Perthes disease. Its cause is unknown.

Dandy W E A Loose Cartilage from an Intervertebral Disk Simulating a Tumor of the Spinal Cord *Arch Surg* 1919 xxx 660

The author reports two cases in which a clinical diagnosis of carcinoma of a vertebra was made but at exploratory operation the tumor was found to consist of cartilage and fluid accumulated in the reaction to the irritation caused by fragments of an intervertebral disk which had become detached and displaced backward bulging into the spinal canal.

In both cases the cause was trauma. The first symptoms were pain radiating down the backs of both legs which was worse on the side of the greater bulging of the tumor mass. Severe pain in the back, rigidity of the lumbar spinal muscles and marked tenderness over the spinous processes and laminae of the lumbar vertebrae. The roentgenograms were entirely negative. Later there was rapidly increasing sensory and motor paralysis with urinary incontinence.

After removal of the cartilaginous sequestrum the symptoms gradually disappeared but the return of motor power did not begin until after seven or eight weeks and was very slow. Ultimately recovery resulted.

A GOTTIEB M D

Ingebrigtzen R Sacralization of the Fifth Lumbar vertebra (Sacralisation des 5^{ien} Lumbalwirbels) *Acta chirurg Scand* 1919 lxx 233

Anatomic sacralization of the fifth lumbar vertebra must be differentiated from pathological sacralization.

The author concludes from his studies that Le Double's first and second degrees of sacralization which were found in 75 per cent of the persons examined are normal forms whereas the fourth, fifth and sixth degrees may cause deviations of the spine contractures and pain.

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successful but at the end of three weeks there was considerable improvement, and at the end of two months the improvement was quite marked

ROBERT V. FUNSTON, M.D.

Steindler A. The Compensation Treatment of Scoliosis. *J Bone & Joint Surg* 1929 21 820

In the compensation treatment of scoliosis the attempt is made to restore symmetry indirectly by means of compensatory curves instead of directly by correction of the scoliosis. The relaxation of the spine necessary to produce the secondary curves must be obtained with care in order that it may not exceed the ability of the active muscular apparatus of the spine to control it.

The central portion of the primary curve is too rigid to be broken by the moderate force applied to procure the compensatory curves but the extremities being more pliable are drawn into the secondary curves as the latter become developed. Accordingly, curves of moderate rigidity become shorter as their peripheral portions are absorbed in the counter curves.

The development of counter curves requires the existence of a fixed point within the primary curve against which the secondary curves above and below are established.

The dynamic problem involved in the compensation method is the maintenance of alignment by active muscle balance. This depends entirely upon adequate development of the body musculature.

The formation of a secondary curve is effected by a rather simple program of active and passive exercises. The musculature is developed by a much more protracted and varied system of symmetrical and asymmetrical gymnastics supplemented by massage.

The compensation treatment fails in the most severe types of habitual scoliosis: the majority of cases of congenital scoliosis and the more severe types of paralytic and rachitic scoliosis but the author concludes from his experience that when the cases are properly selected it will restore the normal body balance.

ANTHONY F. SAVA, M.D.

Henderson M. S. Reconstructive Surgery in Paralytic Deformities of the Lower Leg. *J Bone & Joint Surg*, 1929 21 810

The foot of man has been gradually developed from an arboreal grasping member to a terrestrial weight bearing member. Changes in body structure, forced by altered function have gradually taken place, the heel has been lengthened while the tarsal bones have increased and the digits and metatarsals have decreased in size and significance. The muscles, are balancers and by their action have led to structural changes. They are prime factors in the stability of the foot of man. When through paralysis they lose their tone and power there may be disastrous sequelae in the foot and reestablishment must be undertaken.

Restoration of nerve supply to the muscles by neurotization has not been successful. In selected

cases, considerable restoration of function may be accomplished by tendon transference in which the insertion of a functioning muscle is transferred to another insertion. Support by paralyzed tendons: tenodesis has a limited application. Artificial silk and linen ligaments are usually unsatisfactory in the foot. The most widely applicable and valuable procedures are those which effect stabilization by means of the bony structure of the foot, such as the various and varied forms of arthrodesis: the astraglectomy of Whitman and the bone check operations of Campbell and Putti. The combination of tendon transference and arthrodesis enhances the value of both.

FRACTURES AND DISLOCATIONS

Scudder C. L. The Treatment of Recent Fractures of the Long Bones by Operation. *Ann Surg* 1929 20 580

Darrach W. Disasters Following Operative Treatment of Fractures. *Ann Surg* 1929 20 595

SCUDDER emphasizes that the operative treatment of recent fractures requires the finest technique in surgery and a suitable equipment of instruments and apparatus. The surgeon must have more than the minimal legal requirement of skill. Successful results are dependent also upon the prevention of infection, skilful administration of the anesthetic, the choice of the proper procedure for the given case, adequate pre-operative and postoperative care and early mobilization of contiguous joints.

In some cases open operation may mean only incision and replacement of the fragments in accurate apposition. In others it will be necessary to fix the fragments with absorbable sutures or splint the fractured bone with a metal plate. A plate does not interfere with callus formation to any practical extent, neither does the operative incision hinder repair if it is properly placed.

In properly selected cases of recent fracture open operation should not be delayed as a last resort. It is indicated as the primary procedure in many fractures into joints with displacement of fragments, fractures of the great tuberosity of the humerus, fractures of the surgical neck of the humerus with dislocation of the head of the bone, displacement of the condyles of the humerus not held by acute flexion fractures of the olecranon, certain fractures of the elbow in adults, certain metacarpal, carpal and metatarsal fractures, certain fractures of the head and neck of the radius, fractures of the radius with deflection of the fragments toward the ulnar side, irreducible fracture of the shaft of the femur, displacement of a femoral condyle, fractures of the patella, certain spiral fractures of the bones of the leg and certain fractures of the os calcis.

In conclusion, Scudder reminds us that in open reduction as in all other methods of treating fractures the chief goal is function. Accurate anatomical apposition is not essential to good function.

but poor alignment is not to be tolerated. Of great importance in the restoration of function are massage and early mobilization.

DARRACH says that when the surgeon decides upon open operation in a given case of fracture he should bear in mind the potential disasters that may follow such treatment in order that he may decrease the danger of their occurrence. Such disasters are most frequent in the cases of surgeons who do not appreciate either the need for careful attention to detail or the importance of reporting unfortunate results.

The most common complication is infection, the results of which vary from slight interference with primary union to sepsis necessitating amputation or causing death. Chiefly because of its poor blood supply bone is of all tissues the least resistant to infection.

Hemorrhage caused by the operation or the trauma may prove fatal.

Disturbance of the blood supply by the dissection or by too much stripping of the periosteum may result in delayed union or non union.

Faulty material employed for internal fixation may break or otherwise fail necessitating a second operation. Plates and screws should always be tested before being used.

Poor technique a faulty approach the lack of proper tools rough handling of the tissues and careless immobilization are other factors which may result in failure.

In conclusion the author says that an error in judgment may lead to an unnecessary open operation when a more careful study of the roentgenogram would show the feasibility of closed reduction.

WILLIAM A. CLARK M.D.

Bancroft F. W. The Process of Union After Fracture. *Ann Surg.* 19 9 xc 546

Ashhurst A. P. C. Is Accurate Reduction of a Fracture Necessary? *Ann Surg.* 19 9 xc 556

Speed K. Non Union After Fracture. *Ann Surg.* 19 9 xc 54

Estes W. L. Jr. The Immediate Treatment of Open Fractures. *Ann Surg.* 1919 xc 583

BANCROFT has found in his experimental work that callus formation is sufficient at ten days to prevent the replacement of overriding fragments even though the bone may still be movable at the fracture site. In this stage the callus is gelatinous. In comminuted fractures the small free fragments show no cell nuclei on microscopic examination after two weeks but after four or five weeks have many canals containing red blood cells and bone cells with nuclei have been found. After from eight to twelve months it is impossible to identify separated fragments microscopically. In Bancroft's opinion these findings seem to justify the conclusion that systemic metabolism has little to do with the repair of fractures.

The source of calcium salts for the callus is probably in the fragments at the fracture site

rather than in the blood stream. If comminuted fragments from the fractured bone of a dog are taken out, boiled, and replaced union will occur in a normal manner, but if the fragments are decalcified before they are replaced only fibrous union will be obtained.

The most important factors in the treatment of fractures are accurate apposition of the fragments and an adequate blood supply to insure the growth of granulation tissue which is the precursor of callus. Muscle tissue reacts to pressure in the same manner as fluids, and in the swelling which follows fracture this pressure may be sufficient to occlude some of the blood vessels.

ASHHURST states that in cases of shaft fractures of the long bones in children very accurate reduction is not essential as very marked deformities have been known to straighten out with growth. However, if the fracture is near a joint more accurate reduction is indicated even in children. In the cases of adults who are not able to remodel their bones by growth fairly good apposition and alignment must be obtained. However very little disability will result from lack of apposition in the shaft of a long bone provided bony union results in a good axis line without rotation and with no more than 1 cm. of shortening. Especially in fractures between the knee and ankle there must be no rotation deformity because neither of these joints is capable of rotation to compensate for the difficulty. If oblique fragments are transposed (e.g., the anterior cortex against the posterior cortex and overriding), they should be reduced. More careful attention must be given to the reduction of fragments near joints, except perhaps at the shoulders where scapular motion will compensate for limited shoulder joint motion. Fractures of the lower end of the radius are often followed by perfect function even when there is gross anatomical deformity. The aim of treatment in any fracture is restoration of perfect function and this is dependent only in part upon the form of the bone.

SPEED reports that in a study of the calcium phosphorus content of the blood in over 100 cases of fracture he found it was practically the same in cases of non union as in those with normal union. The phosphorus content rises quickly after a fracture, but it does so also after any operative procedure.

SPEED bases his conclusions regarding non union on seventy four cases. He states that the cause of non union is probably always local. Internal splinting should not be used in operations for non union if it is possible to maintain contact of the freshened bone without them. When internal splinting is necessary it is best done with the patient's own bone. Osteoperiosteal grafts and bone hash furnish good stimulation to callus formation. Sometimes simply drilling through the fragments results in enough hemorrhage to start new bone growth. Careful and prolonged external splinting is essential. The percentage of cures after operations well planned and executed is constantly increasing.

ESTES states that in cases of open fractures immediate surgical care is imperative. First aid should consist in splinting without replacement of protruding bone. On the patient's arrival at the hospital he should be treated first for his general condition and given tetanus antitoxin. In the operating room the skin should be cleansed without much disturbance of the wound and the open wound then freely sponged with hypochlorite or Dakin's solution. After surgical removal of all debris including crushed muscle fragments and completely detached small bone fragments the fracture should be reduced as accurately as possible. The wound may then be sutured tight or left wide open or drained at one end according to the judgment of the surgeon. Many surgeons favor complete closure followed by very few dressings.

If completely closed the fracture may be treated as a simple one and a cast applied. When there is an open wound requiring dressings skeletal traction is more suitable. The advisability of plating of fresh compound fractures is debatable. The value of a plate in certain cases cannot be ignored. Although statistics of a series of cases in which plates were used showed that convalescence was more prolonged and union was more frequently delayed than in cases treated without plates it is probable that the plating was done in the more serious cases and the results may well be attributed to the original severity of the fracture rather than to the application of the plate. Plates are used by many experienced surgeons including Shoudy, Elason, Fagge and Sherman. WILLIAM A. CLARK, M.D.

Putti 4. The Early Diagnosis and Treatment of Congenital Dislocation of the Hip (Ancora per la diagnosi e per la cura precoce della lussazione congenita dell'anca). *Chir. d'organi di movimento* 1929 VII 529.

The author reviews twenty-four cases of congenital dislocation of the hip which were treated by means of a special pad. The oldest patient was a year old and the youngest three months of age. The average duration of the treatment was between six and eight months. The method failed in only two cases. One of these was a case of bilateral dislocation with very marked displacement in a patient with congenital rigidity of several joints and bilateral club foot. The pressure was not sufficient to overcome the adductor rigidity of the hips and the application of a plaster cast was necessary. In the other case the failure was due less to the severity of the condition than to the failure of the mother to apply the treatment systematically.

The clinical symptoms which most frequently suggest the deformity are external rotation of one or both limbs which is almost always associated with adductor limitation, shortening, the sign most frequently noted by the mother, and asymmetry of the skin folds which is generally noticed by the physician. The final diagnosis must be confirmed by roentgen examination.

The article contains numerous roentgenograms showing different types and stages of luxation, preluxation and subluxation. There are three important roentgen signs of preluxation. The first is separation between the head of the femur and the base of the acetabulum which may or may not be accompanied by upward migration of the end of the femur. The second is hypoplasia of the center of ossification of the epiphysis of the femur and delay in its appearance which is of course not manifest before the fourth month of life. The third is abnormal obliquity of the rim of the acetabulum, which is by far the most important sign.

The author reports a case in which the diagnosis was made from abnormal obliquity of the rim of the acetabulum in the first twenty-four hours of life. He emphasizes however that even normally there is considerable variation in the degree of inclination of the rim and that the obliquity must be quite pronounced to justify the diagnosis of preluxation. The sign is particularly conclusive if there is a difference in the degree of inclination on the two sides. Putti suggests that it might be advisable to make a roentgenogram of the hips of every newborn child in order that preluxation may be determined sufficiently early for treatment to prevent later deformity.

ADOLFO G. MORGAN, M.D.

Putti 4. Early Treatment of Congenital Dislocation of the Hip. *J. Bone & Joint Surg.* 1929 XI 795.

Putti contends that there is no reason either theoretical or practical why treatment for congenital dislocation of the hip should not be begun before the second year of age. While the diagnosis is not easy before the child begins to walk, the dislocation would be discovered earlier if the hips were examined roentgenologically in cases in which the child's mother has noticed that one limb differs slightly in shape or attitude from the other, that one limb appears shorter than the other, that one foot turns outward or that one limb is held in a certain degree of flexion and the child cries if she attempts to correct the flexion.

The objection that the condition of the joint is not suitable for stabilization before the second year of age is not valid as it is now possible to obtain a cure without resorting to a manipulation of reduction.

The technical difficulties of treatment before the second year are easily overcome since as reduction is not necessary there is no need for rigorous immobilization or the use of plaster of Paris. To keep the legs widely separated Putti uses a very simple apparatus which can be applied and easily kept in place even in the cases of children who are not clean in their habits.

In the first few months of life the separation is so slight that abduction of the limb at from 45 to 50 degrees is sufficient to bring the head opposite the acetabulum. Maintenance of this position for only a few months will suffice to obtain a permanent reduction.

This treatment is suitable only for children about twelve months of age or younger. The apparatus is easily applied and can be adjusted to any degree of abduction. Two splints hinged at one end are strapped to the medial surfaces of the limbs. The desired degree of abduction is obtained by moving the distal ends of the accessory arms attached to the main splints toward or away from the angle of the inverted V formed by the splint. The treatment is continued for from eight to twelve months. In the author's opinion it is the ideal procedure as the risks of anaesthesia are avoided, there is no trauma to cause osteochondritis, and there is no rigid immobilization with plaster of Paris to cause atrophy of the muscles and rigidity of the joint.

ANTHONY F. SAVA, M.D.

Levander, G. The Treatment of Fractures of the Shaft of the Femur (Behandlung von Bruechen des Oberschenkelshaefes). *Acta chirurg. Scand.* 1929 129 Supp. 211.

This report is based on 275 cases of fractures of the shaft of the femur. The material includes the cases of 153 patients treated at the Maria Hospital during the period from 1911 to 1936 (13 of whom were followed up and studied roentgenologically) and 122 insurance cases. Two types of treatment were represented—operative treatment and continuous extension.

In both groups of cases the incidence of disability was fairly high after operative treatment. Of the extension methods, direct extension proved to be decidedly preferable to indirect extension. Indirect extension is followed by a high incidence of disability and at least in adults is apparently unable to correct shortening. The average shortening is about 3 cm. Occasionally indirect extension must be abandoned because of irritation of the skin, which then renders the use of a different method difficult or impossible.

The operative method is associated with the danger of infection which may not only prevent a good result but threaten life. Even in the absence of infection the various methods of fixation do not always meet the requirements. The healing of the bone may be delayed, the materials employed for osteosynthesis must sometimes be removed, and in the later stages complications such as deformities, spontaneous fractures and pseudarthroses may occur. In the cases reviewed the method of fixation which gave the best results was direct fastening with screws.

The results achieved with direct extension are decidedly better than those of other methods. Direct extension meets all theoretical demands. It maintains the fragments in good apposition and allows the early institution of functional therapy. It may be considered as practically harmless and as applicable to all cases. It is therefore proposed as the normal method.

In the technique used in the Maria Hospital which has given extraordinarily good results ex-

tension is obtained by means of a clamp applied to the condyles of the femur. The thigh is suspended vertically and the leg placed horizontally, in a hammock-like suspension apparatus which is fastened to an apparatus attached over the bed. Dislocated fragments are brought into apposition by lateral attachments to the thigh. When it is impossible to obtain a satisfactory position by this method because of the interposition of soft parts or the shape of the fractured surfaces, an open operation is done while the extension is maintained.

The extension treatment is continued for six or seven weeks. At the end of that time—always in the cases of adults and sometimes in the cases of younger persons—the leg is placed in a plaster cast. At an early stage of the extension treatment motion and massage therapy are begun. If the direct extension for any reason (usually infection) must be interrupted, the leg is encased in plaster with maintenance of the same position as under the extension therapy.

When it is impossible to obtain a satisfactory position of the fragments and the extension must be abandoned and when the fracture does not heal although the position is satisfactory, an operative method is used. Oblique and spiral fractures are fixed with screws and transverse fractures with autoplasmic bone transplants according to the method of Albee.

Fractures in children up to six or seven years of age are treated by indirect extension and vertical suspension of the entire extremity. In the cases of older children the technique described is employed. In the cases of children up to fifteen years of age the attempt is made to obtain a cure with shortening of from 1 to 1.5 cm.

Open fractures are treated by complete excision of the wound followed by irrigation with an antiseptic solution and complete suture.

In the cases of children up to fifteen years of age a fracture is followed in practically every instance by increased longitudinal growth of the bone. The average minimal growth is 1.1 cm. Experimental investigations carried out by the author have shown that increased longitudinal growth may occur also in the nonfractured large tubular bones of the same extremity. The cause of the more rapid growth of the fractured bone is the increase in the blood supply which follows the fracture.

Cotton, F. J. and Berg, R. Ankle Fractures. A New Classification and a New Class. *J. England J. Med.* 1929 101 753.

The authors prefer to consider major ankle injuries not as fractures but as dislocations complicated by fractures. They present the following classification of such fractures based primarily on the treatment: (1) outward dislocation or Potts fracture, (2) inward dislocation or reversed Potts fracture, (3) backward dislocation or Cotton's fracture and (4) upward luxations previously neglected cases.

In Group 1, the treatment is correction by inward pressure and inversion, in Group 2 outward pressure and slight valgus and in Group 3 forward replacement with locking in dorsal flexion. Over correction is impossible.

In each of these groups a plaster cast should be applied until union is solid—about six weeks in Groups 1 and 2 and from seven to ten weeks in Group 3. Thereafter, an outer upright, an inner I strap, and an elevated Thomas heel should be applied in Group 1, a double upright in Group 2, and a double upright with a cross strap in front above the ankle in Group 3. Exercises should be begun early to prevent muscle atrophy.

Fractures of Group 4 are complete fractures of the lower end of the tibia with the fibula generally remaining intact. They are of a comminuted semi impacted type and are occasionally complicated by fracture of the os calcis or astragalus with shattering of the lower end of the fibula and shortening of the shaft of from $\frac{1}{4}$ to $\frac{1}{2}$ in. As a rule the joint capsule

is torn and the foot is in varus. Crepitation is generally absent.

The treatment consists in correcting the upward dislocation and reshaping the comminuted tibia to form a good weight bearing surface. After the foot has been brought down it should be held by traction with a Sinclair skate, a traction boot, or tongs inserted into the os calcis.

In some cases it may be difficult to get enough tibial surface together for a walking surface. In others the presence of outlying fragments may block motion. The most common cause of difficulty is an over long fibula. When the external malleolus impinges on the outer side of the os calcis it causes crippling pain. This condition can be corrected by resection of a portion of the external malleolus. The use of a cast is usually a very unsatisfactory method of dealing with this type of fracture.

Open operation for fixation should be done only after careful consideration.

ROBERT V. FENSTON, M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Ipsen J. Studies of Pathological Arteries (Recherches sur les artères à l'état pathologique) *Acta chirurg Scand* 1929, lrv 341

In two cases of embolism of the femoral artery the author was able to determine the site of the embolus exactly by the aid of oscillography. He states that in cases of arteriosclerotic gangrene of the foot the skin of the affected foot and leg is cooler than that of the normal foot and leg. This shows that, as will be demonstrated by oscillography, the obstruction causing the gangrene is located in the region of the popliteal artery.

In the cases of patients whose arteries had been tied several years previously, measurements of the superficial temperature of the legs were found to be equal, whereas the oscillograph gave scarcely any reading for the affected leg. After the patient had walked the temperature fell much more on the affected side than on the normal side.

The author discusses local arteriospasm. This is common in the feet where the superficial temperature may be several degrees lower than in other parts of the body. In acrocyanosis arteriosclerosis plays a very important part. Local arteriospasm can be explained also by the presence of cicatricial tissue. In a case of this kind the author obtained a good effect by excising the radial artery which was lodged in cicatricial tissue. Another cause of local arteriospasm is a direct effect upon ganglia. During kidney operations Ipsen regularly finds the foot on the same side to be cold in spite of anæsthesia.

In the cases of a number of war invalids it was demonstrated that the amputation stumps were often much colder than the corresponding parts on the sound side. In all amputation stumps the oscillographic deflection was markedly reduced. In lesions of the hands and fingers the temperature of the two hands was fairly equal during the summer but during the winter it showed very pronounced differences. Oscillographic examinations demonstrated that the large arteries were contracted also during the summer.

The treatment of arteriospasm is difficult, whether the condition is general or local. Treatment with thyroïdin has been tried in some cases but its effects were transitory. An important form of local treatment is Leriche's arterial sympathectomy. The author has obtained uncertain results with this operation in arteriospasm but good results in a number of cases of tuberculosis of the foot. In tuberculosis in other parts of the body the effect was less marked, a fact explained by the tendency of the arteries of the foot toward spasticity.

The local arteriospasm occurring in cases of reduction of the superficial temperature generally disappears during anæsthesia and for several days afterward. This perhaps explains why a periarterial sympathectomy carried out on one limb in a case of Raynaud's disease inhibits any arteriospasm that may have been present in the other limbs.

In conclusion the author states that in the foot of a limb affected with deep phlebitis he has noted a rise of temperature similar to that following periarterial sympathectomy. This sign is very constant and of great interest from the point of view of differential diagnosis. It is not present in superficial phlebitis nor in cases of pelvic phlebitis.

Charbonnel and Masse. Arteriography of the Limbs with Sodium Iodide. Especially in Arteritis (Artériographie des membres avec l'iodure de sodium spécialement dans les artérites) *Bull et mém Soc nat de chir* 19 p lv 735

The authors report three cases of limited gangrene of the toes in which arteriography of the lower limb was used.

The first case was that of a woman sixty eight years of age who had albuminuria and diabetes and for three years had suffered from arteritis and trophic disturbances of the legs. At the time of examination there was a slightly infected gangrene of the two toes of the right foot. Pulsation of the posterior tibial or dorsalis pedis arteries was not perceptible. All tests indicated a fair circulation as far as the upper third of the leg. Only arteriography indicated a circulation as far as the heel. A Syme operation was performed, but as the edges of the flaps became gangrenous after four or five days and the general condition remained poor in spite of treatment with insulin, sodium citrate and diathermy, the thigh was amputated at the end of the eight days. The patient died two days later.

Lipiodol injected into the amputated limb stopped suddenly and completely at the middle third of the leg. The arteriograph had been erroneously interpreted. The iodide, a very diffusible substance, penetrated very far but the network of vessels it entered was not sufficient to insure nutrition of the tissues, especially in the amputation flaps. Lipiodol which is less diffusible than the iodide did not pass the middle third of the amputated limb although it was injected with force. The leg should have been amputated at the upper third.

In the second case that of a man sixty five years of age who was free from syphilis, albuminuria and diabetes, examination showed a localized infected gangrene of the right great toe and a small dry, black plaque on the left little toe. All tests including arteriography, indicated that the lesions were in the

peripheral arterioles. At the end of a month the gangrene was improved and remained localized.

The third case was that of a man aged sixty nine years who had lacunar arteriosclerosis, albuminuria, slight diabetes, and dry gangrene of the toes of the right foot. Pulsation of the posterior tibial and dorsalis pedis arteries was imperceptible. In spite of negative oscillography at the ankle, arteriography showed the arteries to be permeable as far as the instep, though not as permeable as in the second case. They were quite thin and the collateral circulation was reduced. At the end of a month and a half of medical treatment the gangrene had slowly extended to the instep. A very clear groove of elimination had formed. If infection does not set an amputation at the upper third of the leg will be considered.

DUAL who presented the report of Charbonnel and Masse to the Society, reviewed several cases from the literature. He stated that on the basis of four cases Brooks concluded that arteriography gives information of aid in the determination of the site of the arterial obstruction. No evidence of an arterial lesion due to the injection was observed. Singleton concluded from his experience in six cases that arteriography is dangerous in gangrene, but in thrombo-angitis obliterans in which the capillaries are more often normal and the collateral circulation is better the method should not be harmful. Among the ten cases reviewed there were four more or less serious accidents. Singleton attributes the accidents which he has observed to irritation of the vessels by the iodine solution retained within them. Charbonnel and Masse are of the same opinion. In their technique they have abandoned vascular compression and make their injection into the uninterrupted circulation. As they have had no accident since the adoption of this method it appears that the solution itself is not harmful.

Dual reported one case in which he used arteriography that of a man who had his feet frozen in 1916 and developed ulcerations of the left foot in 1917. In 1926, a Chopart operation was performed. In 1927 the patient presented himself with an ulceration of the Chopart stump and severe circulatory disturbances of the right foot with ulceration of the right great toe. Arteriography was used in the hope that a lower amputation could be done on the right leg. As the second cubic centimeter of sodium iodide solution penetrated the artery the patient cried out with pain, cramping occurred in the leg and the leg became as white as marble. The next day the vessels were dilated. After two and a half hours the injection was followed by signs of severe intoxication: coughing attacks, sneezing, a flow of tears and a taste of iodine in the mouth. These symptoms lasted three hours.

In four of six cases (two cases reported by Brooks and two by Charbonnel) the findings of arteriography coincided with the clinical evolution of the lesion. In one case (Brooks) they were similar to the findings at autopsy on the leg, and in one case

(Charbonnel) they showed complete disagreement with other findings. In one of the three cases reported by Charbonnel and Masse there was absolute agreement between the findings of all methods of examination and the clinical evolution of the gangrene. In one the findings of arteriography were in accord with the evolution of the gangrene but in disagreement with the findings of the clinical tests and in one the findings of arteriography were erroneous and those of the clinical tests were correct according to the clinical results. Therefore arteriography does not seem to have given either conclusive results or information superior to that yielded by other methods of examination. PAGE

Testa M. Vascular Glomeruli or Arteriovenous Anastomoses and Tumors Arising from Them (I glomeruli vascolari o anastomosi arterio-venose e i loro tumori). *Ann Ital Chir* 1929 VII 963

In 1924 Masson described three small benign tumors beneath the nails which were of a bluish color similar to that of a recent hematoma caused a characteristic spontaneous or provoked pain irradiating to the same side of the trunk and face and in some cases were associated with sympathetic trophic and circulatory disturbances. He called them digital glomeruli, assuming that they developed from the arteriovenous anastomoses of the finger tips.

Testa gives a clinical and histological description of two small tumors of the hand with the same symptoms as those described by Masson. The first which was found in a patient forty five years of age had appeared about five years previously on the palmar surface of the first phalanx of the middle finger of the left hand. The second which was presented by a patient of thirty two years had developed about eight years previously on the dorsal surface of the ulnar side of the right wrist. Histological examination showed that the first was a perithelioma although it had developed at a site where there are generally anastomotic vascular glomeruli but the second had almost all of the morphological characteristics of the tumors described by Masson. On the basis of histological facts which he cites the author comes to the conclusion that Masson's tumors also were probably simple hypertrophied angiomata.

ANDREW G. MOGAN, M.D.

Gilcreest E. L. Traumatic Subclavian Arteriovenous Aneurysm. Final Report. *Arch Surg* 1929 XIX 375

Gilcreest reports a case of traumatic subclavian arteriovenous aneurysm on the right side of eight years duration. The clinical features were: (1) an enormous swelling of the right side of the chest and of the right shoulder arm and hand with tremendous venous dilatation, (2) cardiac enlargement due to increased volume flow of blood through the heart due to the fistula, (3) Branham's bradycardial reaction and associated variations in the

blood pressure due to an increase in the blood volume caused by the fistula, (4) a characteristic thrill and bruit transmitted centrifugally (5) an increase in the oxygen content in the veins distal to the fistula and (6) dilatation of the proximal artery, diminution of the distal artery and dilatation and thickening of the distal vein.

At the first operation the inner portion of the clavicle was resected and the external and internal jugular, subclavian and innominate veins and the first portion of the subclavian artery were ligated proximal to the aneurismal varix. After this procedure the patient showed marked improvement for eight months but at the end of that time the symptoms began to recur. At a second operation performed ten months after the first the fistula was identified the subclavian artery was ligated just proximal to it and the axillary and long thoracic arteries and veins were ligated distal to it. The patient recovered and has remained well for two years.

In cases of arteriovenous aneurism it is imperative to ligate the accompanying vein simultaneously with the artery. In cases of simple aneurism it is advisable to do so. As spontaneous closure may occur and as infection is more likely to occur when intervention is attempted early, few or no traumatic arteriovenous aneurisms should be operated upon before from three to six months after the injury unless cardiovascular effects are conspicuous and progressive. Careful hæmostasis and adequate ligation are

essential. Silk rather than catgut should be used.
FRANK B. BERRY, M.D.

Barron, M. E. and Linenthal, H. Thrombo Angiitis Obliterans. General Distribution of the Disease. *Arch. Surg.* 1929, xix, 735.

The authors report a study of thirty-four cases of thrombo angiitis obliterans from which they conclude that the disease is of general distribution rather than as is commonly believed a condition involving the blood vessels of the extremities exclusively. The signs and symptoms are characteristic of the vessel involved. The authors report in detail a number of cases with symptoms of involvement of the blood vessels of the extremities, heart, brain and abdomen at different periods, in which autopsy showed the involvement to be due to thrombo angiitis obliterans.

In their pathological studies of the disease they frequently found organized thrombi in different parts of a vessel. In one of their cases an organized thrombus was discovered in the posterior tibial artery and a subacute lesion in the lower end of the vessel. From these observations and from the fact that the disease not infrequently exists for many years with absence of pulsation in the dorsalis pedis and posterior tibial arteries but with no signs of impairment of the circulation such as gangrene, they conclude that the disease attacks the larger vessels first, obliterating the arterioles and capillaries in the later stages. SAMUEL PERLOW, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Davis J S *The Removal of Wide Scars and Large Disfigurements of the Skin by Gradual Partial Excision with Closure* *Ann Surg* 1929 xc 645

Gradual excision is especially suited to *scar burns hemangiomas keloids tattoo marks and scars resulting from injury*. It should not be attempted for malignant growths. Davis performs the operation under local or general anaesthesia. In the first stage, an elliptical piece of tissue is removed and the edges of the defect are approximated within the growth itself. After healing has taken place another elliptical segment is removed the edges of the defect being sutured as previously. By this procedure a very wide scar can be converted into a linear scar. As the surrounding skin has time to become stretched between operations it is possible to remove a large disfigurement which could not be removed at one operation. Undermining of the edges about the excision is contra indicated as it produces more scar tissue.

The author includes in his article several photographs of patients which show remarkable results
WILLIAM J PICKETT M D

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Veraart B A G and Drenth J B *Bacterial Infection of Fresh Traumatic Wounds Before and After Disinfection with 5 Per Cent Tincture of Iodine and an Explanation of Wound Infection and Aseptic Healing* (Weber die bakterielle Infektion frischer Unfallschunden vor und nach der Desinfektion mit 5 proz Jodtinktur in Verbindung mit der Erklärung von Wundinfektion und aseptischem Wundverlauf) *Nederl Tijdschr v Geneesk*, 1929 1 2033

The authors made a systematic study of 322 traumatic wounds to determine the effect of 5 per cent tincture of iodine on the course of healing and particularly on infectious inflammation. Before the wound was treated and after it had been cleansed and treated for two minutes by the application of 5 per cent tincture of iodine a platinum loopful of material was taken from its surface and transferred to sterile physiological salt solution. The treatment of the wound after the use of iodine consisted in suture and the application of moist antiseptic dressings. No Priessnitz dressing was used. Equal quantities of the material removed from the wound were plated on agar of different nutrient qualities and both aerobic and anaerobic cultures were made. The cultures were examined microscopically after three days.

The length of time between the accident causing the wound and the bacteriological study varied up to ten hours. One hundred and five of the wounds had been treated with tincture of iodine elsewhere before the bacteriological study was made. The results of the investigation are tabulated according to the number of colonies the type of the wound the time interval between the accident and the institution of treatment the nature of the accident causing the injury and the variety of bacteria found.

The authors conclude from their findings that many fresh traumatic wounds are infected some of them with a large number of pathogenic bacteria. Without treatment or with incorrect treatment the majority will become inflamed. In cases of traumatic wounds coming under treatment late and showing the first signs of an inflammatory reaction numerous pathogenic bacteria can always be found. Energetic cleansing and chemical antiseptics with 5 per cent tincture of iodine practically always is followed by aseptic healing. This treatment results in a complete or almost complete aseptic condition of the tissues. In many cases an immediate bactericidal effect is noted. There is no direct relation between the time that has elapsed since the injury and the number of pathogenic bacteria found.

In the cases reviewed the smallest staphylococci were the ones causing the most severe inflammation. The nature of the injury and the type of tissue involved had no relation to the number or type of the bacteria present. Tincture of iodine never caused macroscopically evident tissue necrosis or endangered the primary suture. Thrombosis and embolism were not observed in the 322 cases reviewed nor in 25 000 other wounds treated similarly. It therefore appears that 5 per cent tincture of iodine is a reliable and safe antiseptic for the treatment of traumatic wounds. C E JANCKE (2)

Wilson W C *The Tannic Acid Treatment of Burns* *Special Report Series 147 Med Research Council* Lond 1929

This report was made at the request of the Medical Research Council of London 'in view of the important practical and theoretical considerations involved'. The preface says 'The conclusion must be that the tannic acid method for the treatment of burns is one of the most important recent advances that have been made in modern therapeutic arts'.

The author discusses in some detail the clinical course the pathology and the principles of the treatment of burns. He then reports 217 cases of burn treated by the tannic acid method in the Royal Edinburgh Hospital for Sick Children and the

Royal Infirmary at Edinburgh. The general outline of his treatment follows that recommended by Davidson. The patient is put to bed at once and the usual measures for shock are instituted. The burned area is cleaned immediately, under nitrous oxide anaesthesia if necessary. A fresh 2½ per cent solution of tannic acid is then sprayed over it every hour until the brown coagulum appears. No dressings are applied, the area being exposed to the air under a cage. In facial burns great care is taken to protect the eyes, the external auditory canal and the nostrils from the tannic acid. Tannic acid on the cornea is especially to be avoided. The coagulum is allowed to remain until it peels readily (from eight to fourteen days). If infection occurs drainage is secured by removing the crust. Under no consideration are hot wet dressings used as moisture seems to release the toxin.

Of the 117 burns 95 were due to scalding and 22 to fire. All but 12 of the patients were under ten years of age. Eighteen were under one year. There were 13 deaths, a mortality of 11.11 per cent. Among the patients under ten years of age there were 11 deaths, a mortality of 10.48 per cent. This death rate is compared with the mortality of 38.7 per cent reported by Fraser as occurring in a series of 300 cases of burns in children under ten years of age who were treated by other methods. Four of the deaths in the cases reviewed by Wilson were due to shock, 3 to acute toxæmia, 3 to sepsis and 3 to causes not connected with the burn. Of 35 children burned to the extent of 12 per cent or more of the total body surface only 8 (22.9 per cent) died. When the tannic acid method is used the outlook

is favorable when less than 35 per cent of the body surface is burned and though grave, is not hopeless when from 35 to 60 per cent of the body surface is burned. Burns of greater extent than 60 per cent of the body surface are rapidly fatal.

Although the tannic acid treatment is carried out best in a hospital, it can be adapted to first aid and is much to be preferred to the use of carron oil and other greasy substances. The author gives in detail directions for the emergency first aid use of the tannic acid treatment in mines and factories.

MICHAEL L. MASON, M.D.

ANÆSTHESIA

Rapoport, B. Observations on Spinal Anæsthesia with a Report of 500 Cases. *Anes. & Anal.*, 1929, vol. 276.

In reviewing the literature on spinal anæsthesia the author was surprised at the diverse opinions expressed as to its efficacy and safety. He has employed it in 500 cases without a death attributable to the anæsthetic. There are no contra indications to its use except in the cases of moribund patients and cases of disease of the nervous system. Serious complications are rare. Vascular depression is best combated by the Trendelenburg position. Caffein sodium benzoate is also of value. Failures and complications can be eliminated by perfection of the technique. For operations on the upper part of the abdomen the injection is made in the first lumbar interspace. The lower the site of operation the lower the point of injection.

GEORGE R. McULIFF, M.D.

PHYSICO-CHEMICAL METHODS IN SURGERY

RADIUM

Regaud C. Progress and Limitation in the Curative Treatment of Malignant Neoplasms by Radium. *Brit J Radiol* 1929 11 461

The author briefly reviews the development of radium therapy, the hopes it holds out and the eventual limits of its efficiency.

Local curietherapy is defined as the use of a tube of radium from which the radiations act on adjacent parts decreasing in intensity according to the square of the distance. This is by far the most important form of curietherapy. General curietherapy consisting in the introduction of radio active bodies into the blood stream has yielded little. Radiation with the penetrating gamma rays (analogous to γ rays) which can pass through several centimeters of lead is made possible by filtering through metal sufficiently to remove the beta rays. Radon the gas removed from a solution of radium salt was placed first in radio active seeds of glass and later in gold or platinum and used to great advantage in the treatment of small cancers. Aside from the seeds and the beta rays employed in the treatment of certain superficial skin cancers local curietherapy uses nothing except the penetrating gamma rays from small tubes of dense metal preferably iridium platinum. At the Radium Institute of Paris such platinum needles with an active length of 15 mm are employed almost routinely. There are 3 series of these tubes. In one series the wall thickness of platinum is 0.5 mm, in another, 1.0 mm and in another 1.5 mm. All tubes in the same series are identical. With these series and by means of support applicators of every shape dimension and power are prepared.

There are 3 main procedures in local curietherapy—internal radiation, interstitial radiation and external radiation. In internal curietherapy radium tubes are introduced into natural cavities and passages of the body such as the mouth, nose, larynx, oesophagus, bladder, and uterus. This treatment has not proved very successful in general but will probably always be used in cases of squamous cell cancer of the uterus. Of a series of 610 cases of cancer of the cervix treated at the Radium Institute of Paris in the period from 1919 to 1926 and representing all degrees of extension of the lesion a clinical cure was obtained in 30 per cent and the incidence of five year cure increased from 8 per cent in 1919 to 32 per cent in 1923. In 61 cases which were operable a cure was obtained in 60 per cent and the incidence of five year cure increased from 20 per cent to 31 per cent. In 176 borderline cases the incidence of five year cure increased from 33 per cent to 43 per cent and in 373 inoperable cases it increased from 3 per cent to 13 per cent.

It is in the interstitial curietherapy that the greatest progress has been made. The Radium Institute of Paris employs platinum needles with a wall thickness of 0.5 mm but it has altered the technique from the use of a few foci and radiation of great intensity to the use of numerous foci with radiation of weak intensity and increased duration of the treatment. This method of radium puncture is reserved for certain cancers of small size cutaneous or subcutaneous certain varieties of breast cancer and all varieties of cancers of the tongue. It gives good results. Of 344 cases of cancer of the tongue and floor of the mouth which were treated in the period from 1920 to 1926 it gave a cure in 23 per cent. In an additional 20 per cent the local growth was eradicated but the treatment failed because of cervical extensions. Accordingly a cure of the local cancer was obtained in 43 per cent. Eighty per cent of the cases were inoperable.

Radium surgery is employed for lesions of such type or so located as to be incurable by other types of curietherapy or the γ rays. In cases of carcinoma of the antrum which were treated by Haurant and Monod by radium surgery in the period from 1922 to 1925 a cure was obtained in 38 per cent.

In external curietherapy radio active substances are maintained at a short distance from the skin by mechanical means. The various series of applicators are combined in strengths varying from 2 to 15 mgm of radium each according to the distance from the skin and the duration of the treatment. Two substances are employed for this purpose namely columbium paste and hydrose. This procedure has resulted in great progress in the treatment of extensive and deep cancers of the skin, lip, mouth, pharynx, larynx, breast and lymphatic glands. Of cases of cancer of the lip which were treated in the period from 1920 to 1926 a cure was obtained in 92 per cent of 62 which were operable in 7 per cent of 22 which were of the borderline type and in 14 per cent of 28 which were inoperable. When the depth of the lesion requires a skin distance greater than 8 cm the dose of radium exceeds several hundred millicuries. Such amounts require lead protection around the radium for both the patient and the persons giving the treatment. This form of radium therapy is called telecurietherapy. Telecurietherapy has 2 main techniques—the use of numerous small foci and the use of a few large foci. On account of the expense not more than 4 or 5 gm of radium are employed. The skin distance rarely exceeds 12 cm. The use of greater distances would be ineffective and extremely costly.

The increase in our knowledge of the behavior of radiated cancerous tissues has brought about great progress in the radiation treatment of malignant

lesions. The essential problem is the destruction of all fertile cancerous cells in the invaded area. Two methods are available to accomplish this purpose. One is the destruction of all cells within the area, both normal and neoplastic. This method is permissible in the treatment of small superficial lesions, but is of little practical importance. The other method is the destruction of the cancer cells by cell dissection leaving as much as possible of the normal tissue undestroyed. Such selective radiotherapy is possible only when the neoplastic cells are more radiosensitive than the normal cells which must be preserved. The selectivity of action is more nearly approached as the radiation used is more homogeneous and penetrating. This explains why the gamma rays are more selective than any X rays known. Gamma rays are as effective as X rays on the more sensitive cells but they spare more perfectly the normal elements of the general tissues. In principle a cancer should be curable by selective radiotherapy if all of its fertile cells are markedly more radiosensitive than the normal cells of the general tissues and of the neighboring organs traversed by the rays. In certain cases radiotherapeutic measures are relatively powerless not so much because of the radioresistance of the neoplasm as because of the radiosensitivity of the surrounding normal structures. In cases of cancer of the skin, cervix, mouth, larynx and antrum it has been found possible by extending a single treatment over a

period of several days to obtain a much higher incidence of cure than is obtained when the same dosage is given in a shorter period and at the same time to preserve the integrity of normal tissue far more effectively. It has been shown that the arrest of the circulation of the blood to an organ increases the radioresistance of that organ. The frequently repeated and delayed doses of radiation are condemned on the basis of the development of a radioimmunization. The single treatment administered in a sufficiently short time (a few weeks at the most) is essential for the cure of malignancy.

All techniques of procedure in attacking cancers have been tried. Radium puncture should survive. Radium surgery offers an interesting field for research. Internal curietherapy appears to have given the maximal success which it can attain. Apparently it will continue to be used only in the treatment of uterine cancer. Supports of plastic materials are very convenient and seem susceptible only to persection of detail. Telecurietherapy offers great promise in the treatment of deep lesions but the scarcity and high cost of radium limit its progress. The radiosensitivity of normal and neoplastic tissues must be further studied. Always there will be the obstacle of too great local extension and generalization of malignant tumors. At best, radiotherapy and surgery are only local methods of treatment and are doomed to failure by generalization of the disease.

A. JAMES LARKIN, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Seale E R The Endocrine Aspects of Scleroderma
Report of a Case with Glandular Dysfunction
South M J 1929, xxi 885

The author reports a case of scleroderma presenting band like and small multiple lesions and evidence of derangement of function of several glands of internal secretion. On three occasions the basal metabolism was found to be -7, -12 and -19. Dysfunction of the glands governing sexual development was also apparent. Except for low blood pressure and the lack of response to adrenalin there was no suggestion of suprarenal hypofunction. The retarded development scanty growth of hair low blood pressure and increased sugar tolerance indicated hypopituitarism. The X ray revealed calcification of the pineal gland. Tests of the function of the sympathetic nervous system showed hyperirritability of the parasympathetic or vagotonia.

The author agrees with Hoffman that persons who develop scleroderma have an unstable sympathetic nervous system the result of an abnormal neuroendocrinological mechanism often evidenced as dysfunction of one or more endocrine glands.

W N ROWLEY, M D

Handley W S Lymph Stasis the Precursor of Cancer
Brit M J 1929 ii 607

According to the theory of evolution every cell of the higher animals is descended from a primitive one-celled organism with an irresistible appetite for food and multiplication. These are the appetites that dominate the cancer cell and cancer may be considered an atavistic reversion of certain cells of the body to the state of their primitive one-celled ancestors.

Warburg has recently shown that the cancer cell has somehow acquired an entirely new type of cell metabolism in which it behaves like an anaerobe deriving most of its energy from the hydrolysis of sugar into lactic acid and relatively little from oxidation. Chronic irritants produce cancer but the author suggests that the epidermic changes are secondary to a lymphangitis which causes a lymphatic obstruction with resulting oxidation changes leading these cells to take on the primitive characteristics.

Papillomata or papillary hypertrophy very frequently precedes cancer of the breast, the colon and rectum produced experimentally. Lupus erythematosus is often followed by warty growths one or more of which may become carcinomatous. The author has shown that lupus is essentially an obliterative tuberculous lymphangitis. In this disease

blocking of the lymphatic is the primary factor with chronic papillary hypertrophy as its consequence.

Papillary hypertrophy as a sequela of pure lymphatic obstruction apart from local infection is best seen in elephantiasis. In this condition chronic ulcers at times become malignant. The author cites a case in which, after radiant heat baths virulent multiple epitheliomata developed.

GEORGE A COLLETT M D

Lipschuetz B The Cell Structure of Tumors of Human Origin Especially Cancer of the Breast
(Zur Kenntnis der Zellstruktur menschlicher Geschwulste insbesondere des Brustdrüsenkrebses)
Wien klin Wchnscr 1929 i 677

For a long time the author has been studying the specific structural changes occurring in the cells of tumors of animal origin. In recent studies he has been able to demonstrate similar changes in tumor cells of human origin which vary only slightly with the race and type of cell of the host. The tumors of human origin investigated were two round-celled sarcomata one neurocarcinoma, and eight breast cancers.

In contrast to normal cells the cells of a round-celled sarcoma of the skin showed a basophile paranuclear mass and a well stained distinct archoplasm. In the early stages of the formation of a neurocarcinoma the differences from normal cells were especially distinct. The basophile mass appearing beside the nucleus is designated as the plastin reaction of the cytoplasm. In the breast carcinomata studied a somewhat modified plastin reaction was found. In tumors of human origin as in transplantation tumors of animals this plastin reaction is independent of the type of cell of the organ involved and of the mesenchymal or ectodermal genesis of the tumor. All of the blastomata studied have shown the described cytological changes specific for blastoma a fact indicating that blastoma is to be considered a cell disease sui generis.

HANS ERLICH (2)

Begg A M and Cramer W Alleged Experimental Production of Malignant Tumors in the Fowl
Lancet 19 9 ccviii 697

Begg and Cramer point out a source of error in the experimental production of malignant tumors of the fowl. It is well known that the type of tumor designated as 'Rous tumor No 1' can be transmitted by the use of an extract of the tumor passed through a Berkefeld filter. In experiments in which the authors attempted to transplant a mouse tumor to a chick by means of an extract obtained by extraction of the mouse tumor in a mortar and filtration through a Berkefeld filter the tumor that developed in the chick was not identical with the mouse tumor but

resembled Rous tumor No. 1. When the data were rechecked it was found that the mortar used for the extraction of the mouse tumor has been used several hours previously for the extraction of a Rous tumor. It was evident therefore that some of the filterable agent still present in the mortar had contaminated the mouse-tumor extract and given rise to the tumor in the chick. MANUEL E. LICHTENSTEIN, M.D.

Mason R. and Wells H. G. On the Occurrence of True Mixed Carcinomatous and Sarcomatous Tumors (Sarcocarcinoma) with the Report of a Mixed Carcinoma Chondrosarcoma of the Thyroid of a Dog. *J. Cancer Research* 1929 xii 207

The growth of carcinoma stimulates proliferative activity of connective tissue to form the stroma for the epithelial structure. Frequently the volume of the fibrous tissue growth greatly exceeds that of the epithelial growth. While sarcomatous change is not common in and about carcinomata, true mixed sarcoma and carcinoma are known to occur. The authors report a mixed carcinosarcoma of the thyroid gland of a dog with cartilaginous and osteoid structures in the stroma and separate as well as mixed metastases of carcinoma and sarcoma.

This tumor seems to demonstrate conclusively that at least some of the mixed tumors of the thyroid are truly mixed sarcocarcinomata rather than carcinomata with pseudosarcomatous portions formed by altered epithelial cells. The fact that the dog had also two small benign growths in the mammary gland—one an adenoma and the other a chondroma—indicates that it was susceptible to the formation of both cartilaginous and epithelial tumors. The great size and malignant character of the thyroid tumor showed it to be primary. The two mammary gland tumors were very small, well encapsulated and of benign structure. MORRIS H. KAHN, M.D.

Oppel V. Epinephrectomy (Die Epinephrektomie). *Centralblatt med. Z.* 1928 i 464

Oppel has proposed epinephrectomy for the treatment of spontaneous gangrene. He discusses the problem on the basis of 200 cases. He considers removal of the adrenals as causal therapy in the management of spontaneous gangrene, a condition he designates as suprarenal gangrene. As a rule he removes the left suprarenal because the right one is too near the vena cava. He recommends the lumbar incision with or without opening of the pentoneal cavity. Resection of the twelfth rib makes the approach easier. Attention is called to the fact that the eleventh rib may be mistaken for the twelfth if the latter is poorly developed and that such an error may lead to injury of the pleura.

The author has performed 100 epinephrectomies for suprarenal arteriosclerosis and his associates have performed 40. Herzberg, who has been skeptical regarding the practical results of the operation, has collected 52 more. Damperoff has reported 3. Rubashev 1. Sachs 3. Leriche 6, and Hertz, 4.

Accordingly, more than 200 epinephrectomies for hyperadrenalinæmia have been done.

In the 140 cases operated upon by the author and his associates there were no fatalities from hypo adrenalinæmia, but in a case reported by Spasoku, locky death resulted because the right adrenal did not function.

The operation is difficult when the adrenals are located near the vessels of the renal pedicle. In a case of this kind the author was obliged to remove the kidney to stop the hemorrhage and the patient died of shock. Three of the author's patients died of postoperative sepsis. On the basis of his statistics, Herzberg estimates the mortality of the operation as 14 or 15 per cent. Oppel's mortality was 7.2 per cent. In Oppel's last 80 epinephrectomies there were 5 deaths, a mortality of 8 per cent.

Oppel has found that epinephrectomy gives good results also in Raynaud's disease (10 cases). Herzberg states that the number of amputations which are necessary even after removal of the adrenals is too high. Oppel believes that epinephrectomy often renders amputation unnecessary.

The permanent results of epinephrectomy have been investigated by Oppel over a period of eight years. In 42 cases there were 18 recurrences and 24 cures. Among the 18 cases with recurrence there were 3 deaths. Eight of the patients with recurrence were under thirty-five years of age. Oppel ascribes the recurrence to hyperfunction of the remaining adrenal. In the 24 cases in which a cure was obtained the period of observation ranged from one and a half to five years. When a patient who has lost both lower extremities and is threatened with gangrene of the hands is relieved of the pain in the hands and feels well after epinephrectomy he is considered cured. Of 7 patients who lost an extremity 2 have been well for more than five years, 3 for more than four years, 1 for more than three years and 1 for more than a year and a half. Of those who lost no extremity, 3 have been well for more than three years, 6 for more than two years, and 5 for more than a year and a half. SCHAAK (Z).

DUCTLESS GLANDS

Rowe A. W. Studies of the Endocrine Glands. IX. The Differential Diagnosis of Endocrine Disorders. *Endocrinology* 1929 xiii 327

The author has compared the relative frequency of complications to 500 cases of endocrine conditions with the frequency of similar complications in 500 cases of non-endocrine conditions. The findings are summarized in the table.

The large number of cases of mental retardation in the endocrine group was due to the fact that such cases were referred for study only when various stigmata suggested a possible glandular background. Primary anemia and ear disease occurred with abnormal frequency in the non-endocrine group. The number of non-endocrine syphilis cases may be traced to the fact that syphilis frequently simulates

TABLE I—PERCENTILE COMPLICATION OF PRIMARY ENDOCRINE CASES

Complication		Endocrine group						Non e group (%)
Group	Condition	Pituitary	Thyroid	Go d	Adrenal	Pancreas	Total	
Infectious	Tuberculosis	5	8	6	40		7	51
	Atrophic rhinitis	0	1	3	0	0	10	0.3
	Arthritis	0	7	11	13	13	50	43
	Tonillitis	11	16	9	0	13	54	5
	Other focal infections	0	3	0	7	7	6.6	
Psychoneuroses	Nervosities	8	6	23	0	7	10.8	4.4
	Psychoneuroses	9	6	23	12	7	50	80
	Psychoses	5	3	2	0	7	3.8	2.1
Nervous system	Lesions of brain and cord	27	11	1	20		1.5	10
	Epilepsy	3	1	2	0	7	8.2	1
	Mental retardation	0	4	0	0	0	3.4	1.5
	Physical retardation	3	3	0	0	0	0	0
	Thyroid overgrowth with Cholesterolemia	3	1	0	7	0	0.8	0.4
Metabolism	Cholesterol	3	1	0	0	0	1.4	0.6
	Diabetes	1	0	6	7	7	1.4	6.0
	Miscellaneous bone diseases	25	11	4	0	10	14.0	11.1
Cardiovascular system	Myocarditis	4	3	1	7	0	8.1	2.0
	Heart	8	4	4	0	0	3.3	1.5
	Cardio-renal disease	1	8	23	53	13	10.9	3.0
	Hypertension	1	4	4	7	0	3.5	0.9
Blood	Hypertension	8	7	4	0	7	6.2	0.0
	Primary anemia	0	1	0	0	0	0.1	1.0
	Hemophilia	0	0	0	0	7	0	0.2
Tumors	Malignant	0	3	1	7	0	1.0	1.2
	Benign	3	1	0	0	7	2.6	1.0
	Non Toxic goiter	4	0	5	0	0	2.6	
Miscellaneous conditions	Eyes	1	3	4	7	20	3	2.8
	Ear	3	2	4	0	0	4.6	13.9
	Skin	5	2	3	0	7	3.6	4.6
	Allergy	3	6	5	0	0	4.3	2.4
	Gastro-intestinal	1	7	0	23	0	4.8	3.9
	Liver and gall bladder	20	19	19	0	17	10.4	17.4
	Syphilis	5	4	3	0	40	7	3.1
	Pyelonephritis	9	1	12	0	0	3.3	0
	Metastasis	4	6	4	0	11	3.6	0
	Infertility	4	6	4	0	0	3.6	2
	Pregnancy	1	1	0	0	0	0	1
	Uncomplicated	5	11	0	0	7	6.4	3.6

Based upon females alone

† Based upon number of patients treated

diseases of the ductless glands. The small proportion of focal infections in the non endocrine group is somewhat misleading.

The high incidence of heart disease in the endocrine group was found not to depend upon the thyroid factor as might be anticipated.

The patients with endocrine disorders, especially those with ovarian conditions, had had a large amount of abdominal surgery.

Endocrine disorders are reported more often in the cases of females than in those of males—the ratio being 3:1. In general the age at which endocrine disorders develop is somewhat earlier than that at which non endocrine diseases occur.

The number of cases in the adrenal and pancreas groups is too small to allow definite conclusions but the frequency of tuberculosis and kidney diseases in the adrenal group and of syphilis and cataract in the pancreas group seems significant.

The author has studied more than 4,000 cases but in many instances the data could not be tabulated satisfactorily because of the functional level of a single gland and also because of the varied relation-

ships of composite glands. No attempt was made to determine specific causal relationships, but the findings seem to warrant the following conclusions:

1. The occurrence of most non endocrine complications in the endocrine group and the non-endocrine group in so nearly equal numbers indicates that a significant increase in the presence of a symptom or a positive response to a test in the endocrine group is probably due to the glandular factor.

2. Certain non endocrine disease states seem to be associated selectively with individual endocrineopathies although usually represented in them all.

WILLIAM E. SHACKLETON, M.D.

SURGICAL PATHOLOGY AND DIAGNOSIS

Roffo A. II. An Indicator of the Death of Tissues Studied in Cultures of Tissues *in Vitro* (Sobre un indicador de la muerte de los tejidos estudiado en los cultivos de tejido *in vitro*). *Rev. med. Lat.* 1919 9: 1173.

It is difficult to determine the absolute death of an organism since even after the vital functions of the

body as a whole have stopped the tissues continue their vital functions until autolysis brings about total disintegration of the protoplasm. The author has demonstrated survival and growth of tumor cells cultivated *in vitro* without the aid of conserving fluid. He has found that living tissue gives rise to products which change the hydrogen ion concentration of the medium in which it is placed. In the presence of living tissue the medium becomes distinctly acid from the absorption of carbonic acid and the production of amino acids, ketonic lactic and other acids.

The experiments reported in this article were carried out with the heart of a chicken embryo ten days old and a spindle celled mouse sarcoma. When a stain was added to the culture medium as an indicator (phenolsulphonphthalein 1:1000 or 1:1500 does not affect the vitality of the tissue) it turned from red to yellow in proportion to the intensity of growth of the tissue cultivated. When the experiments were repeated with dead tissue that had been boiled for five minutes the red color of the stain did not change.

AUDREY G. MORGAN, M.D.

EXPERIMENTAL SURGERY

Rous, P. and Gilding, H. P. Studies of Tissue Maintenance. I. The Changes with Diminished Blood Bulk. *J. Exper. Med.* 1929, 1:259.

Gilding, H. P. Studies of Tissue Maintenance. II. The Service to the Liver and Digestive Tract After Hemorrhage. *J. Exper. Med.* 1929, 1:213.

ROUS and GILDING used the spread through the living animal of various highly diffusible dyes as an indicator of the ability of the circulation to serve the tissues under various conditions. The method is direct and searching. It shows that blood service to the viscera is normally far more profuse than that to the skin and muscles. After hemorrhages which greatly reduce the blood bulk service to the viscera is in general still well maintained even when the animal is in extremis. However, great compensatory contraction of the splanchnic vessels—and physiologists have long supposed it to be very great—it certainly does not suffice to hinder blood service anywhere in the digestive tract. On the other hand the service to certain unessential abdominal organs (spleen, omentum, urinary bladder) is cut off in large part or wholly and in comparison with the

essential viscera the skin and most of the skeletal muscles of the bled animal are largely deprived of circulation.

The deficiency takes a curious form: some regions being still fairly served by the blood while others next to them are no longer well supplied. In the skin the areas served or not served are very irregular but are determined to some extent by local pressure factors. Within the muscles the neglect is orderly in arrangement and is largely referable to compensatory vasoconstriction. Certain of the muscles, those used in respiration and in swallowing, furnish important exceptions to the general rule, being excellently served despite the serious general state. The red bone marrow of the depleted organism continues to be well served by the blood even though situated in limbs that are otherwise almost devoid of a circulation. The pregnant uterus also is excellently supplied despite the serious general state.

The changes are such as would tend to conserve the forces of the depleted organism and contribute to its recovery.

GILDING states on the basis of his experimental work that the vascular readjustments in compensation for a great reduction of blood bulk affect the service rendered by the blood to the gastro-intestinal tract and liver far less than that to the skin and muscles. Into the latter tissues India ink is carried almost not at all, whereas in the capillaries of the bowel and liver it circulates in quantity. Evidently vasoconstriction is much less effective in these viscera. Nowhere do they present a patchy ischemia like that which is so wide spread in the peripheral tissues. The blood service is maintained to the same extent everywhere throughout the liver even when one of its two sources (hepatic artery or portal vein) is obstructed and the intrahepatic blood pressure is brought very low.

A pronounced patchy ischemia of the stomach and large bowel can be induced by the intravenous injection into normal animals of sufficient epinephrin to cause the systemic blood pressure to mount to an abnormally high level. Pituitrin used in the same way has a greater effect. Blood service to the organs mentioned may be completely abolished by means of it. In both instances however service to the small gut and liver is still excellently and evenly maintained.

JACOB M. MORRIS, M.D.

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS LIST ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

SURGERY OF THE HEAD AND NECK

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EDITOR'S COMMENT

JELLETT'S paper on the future of obstetrical practice (p 339) emphasizes certain features of a situation that has caused increasing concern among thoughtful obstetricians and leaders of medical practice for a number of years. Jellet states that in Holland, England, Wales, Australia, and New Zealand the maternal mortality rate from sepsis is from four to six times greater in cases attended by practitioners than in those attended by midwives. He attributes the high incidence of puerperal sepsis in patients under the care of general practitioners to a number of factors: first of all, to haste, unnecessary interference, and sepsis; secondly, to lack of education sufficient to enable general practitioners to treat obstetrical complications successfully, thirdly, to inadequate antenatal care and failure to recognize abnormal conditions early in the course of pregnancy, and finally, to the lack of a suitable environment for the patient during and after labor with consequent constant potential danger of exogenous infection.

In a broad sense, these elements of weakness constitute an indictment of our entire social system, and the problem of prevention of puerperal sepsis and maternal morbidity has many aspects aside from its medical aspects. That medical men, however, have combated it more successfully in certain parts of the world than in others is evidenced by the low maternal death rate in the Scandinavian countries (Mosher *J Med*, Cincinnati 1927, viii, 164).

Caldwell and Studdiford's report of the complications and results of breech deliveries during a five year period at the Sloane Hospital for Women (p 334) and the discussion of their report by Burgess, Ehrenfest, De Lee, Matthews and others emphasize the high infant mortality associated with this complication of pregnancy, the importance of its recognition early in the course of pregnancy and the increasing appreciation, first, of the value of external version, and, secondly, of cesarean section in suitable cases. It is of particular interest, in connection with a study of the complications and results of breech deliveries, that for a time the practice of routine interference during the second stage with the patient under deep anesthesia was carried out by the authors, but because the mortality increased so

greatly the method was abandoned and conservative management again adopted.

Gastroscopy as a routine procedure in the diagnosis of gastric lesions has not aroused such widespread interest nor attained the popularity in America that it has in European countries possibly because American medical men are unduly fearful of the difficulties associated with the passage of the gastroscope or because they have not had the opportunity of familiarizing themselves with its possibilities and the technique of its use. Gutzeit, in a recent paper in the *Ergebnisse der inneren Medizin*, discusses, on the basis of an extensive experience, the indications for gastroscopy and the information that one may expect to secure by the use of this method. He has found it of greatest value in the recognition of gastritis, of the inflammatory changes surrounding an ulcer, of the postoperative changes in the gastric mucosa which are not often shown by X-ray examination—marked gastritis, spasm in the new outlet ulcers at the site of anastomosis, or ulcers that have been overlooked, of hypertrophic gastritis, and of atrophic gastritis. Because of the possibility of studying the inflammatory mucosal change about an ulcer he has found it of great value in determining the most suitable time for operation and the success or failure of medical management of an ulcer. He states that in forty postoperative cases which were followed by poor results the cause was disease of the gastric mucosa which was constantly present and usually more severe than gastric disease developing spontaneously.

Sweet's interesting discussion on the function of the gall bladder (p 316) in which he sets forth clinical anatomical and experimental evidence to show that the gall bladder is an organ of absorption and that material which passes into it through the cystic duct does not pass out again, von Haberer's discussion on the surgery of the biliary tract and his emphasis on the varying severity and characteristics of biliary tract disease in different individuals and different sections of central Europe (p 319) and Barnes Strachan and Statham's papers on chronic cervicitis and its treatment are a few of many more helpful contributions abstracted in this month's issue.

INTERNATIONAL ABSTRACT OF SURGERY

APRIL, 1930

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

EYE

Blakeslee G A Eye Manifestations in Fracture of the Skull *Arch Ophth* 1929 11 566

Six hundred and ten cases of skull fracture were reviewed with regard to eye signs. Eye signs occurred in 78 per cent. The cases with eye signs had a poorer prognosis than those without such signs.

The eye signs included hemorrhage in the lids and conjunctiva, paralysis of the extrinsic eye muscles including ptosis, nystagmus, pupillary phenomena, scotomata and fundus changes. Nystagmus was infrequent and usually temporary. Fixation of the pupils either dilated or contracted was an ominous sign. Unilateral dilatation and fixation of the pupil always occurred with epidural hemorrhage on the same side and with subdural hemorrhage. Scotomata and fundus lesions were infrequent. Of the fundus lesions, papulitis and hemorrhage near the macula were the most common. Choked disk was very rare.

SAMUEL A DARR M D

Meffenry D D Practical Points in the Treatment of Trachoma *J Am Med Ass* 1929 30 1291

In the treatment used by the author in acute cases of trachoma the follicles are rubbed off with the finger covered with gauze saturated with either boric acid powder or copper sulphate in glycerin (2 to 5 per cent). Copper sulphate (2 to 5 per cent) or silver nitrate (1 per cent) is then applied daily or two or three times a week and the patient is instructed to use a 1:5,000 or 1:3,000 solution of mercuric oxycyanide two or three times daily at home.

In chronic cases canthoplasty is often found necessary. Grattage, expression, brosseage and tarsectomy are done as indicated. The author describes the technique of each of these procedures. He regards expression of the follicles in the caruncle as of extreme importance. To accomplish this he seizes the caruncle with an iris forceps inserted through one ring of a Prince forceps. In this way

the caruncle can be pulled up and held firmly during expression with the ring forceps.

After the treatment, even patients free from symptoms are re-examined at regular intervals for a year or two.

Meffenry states that by the methods described 99 per cent of cases can be cured.

SAMUEL A DARR M D

Holloway T B and Fry W E Asteroid Hyalitis. Report of a Case with Microchemical and Histological Observations *Arch Ophth*, 1929 11 51

A man sixty-nine years of age presented acute glaucoma and asteroid hyalitis of the right eye. Trephination was performed. Eighteen days later the patient died of pneumonia.

Pathological examination of the eye one hour after death showed the ordinary changes of glaucoma and a homogeneous non-cellular exudate beneath the choroid on both sides. The vitreous was clear except for white spheres which measured from 0.05 to 0.08 mm in diameter. These spheres were most numerous in the central, lower, and posterior parts of the vitreous and were arranged roughly in vertical columns. They contained a carbonate, calcium, a stearate or a palmitate or both and probably lipoids in combination.

SAMUEL A DARR M D

Gradle H S and Meyer S J The Blind Spot *Am J Ophth* 1929 22 822

The description of the first method of examining the blind spot was published by Manotte in 1668. Since then many others have demonstrated the importance of the study of this spot. Graefe reported enlargement of the blind spot in amblyopic affections. Corcuss and Bjerrum investigated its relation to glaucoma. Cantonnet its relation to the degree of myopia and van der Hoeve its relation to posterior ethmoiditis. Donders proved that the blind spot corresponds to the entrance of the optic nerve into the eyeball.

The vascular and avascular portions of the optic nerve which lie free in the orbit are involved primarily in purulent inflammation of the orbit and secondarily by disease elsewhere in the nerve. In the authors' opinion, the portion in the canal is subject to disease from the sinuses not because of its relation to the sinuses but because of the relationship of the soft tissues in and about the canal.

The authors discuss the pathological significance of the blind spot, the indications for its examination, its size and location and the methods of measuring it.

VIRGIN WESCOTT M D

Coverdale H V. The Cause and Results of Obstruction of the Central Artery of the Retina. A Study of Eleven Cases. *Brit J Ophth* 1929 xiii 529

Coverdale reviews the literature and reports eleven cases of obstruction of the central retinal artery.

The majority of the cases are considered to be due to embolism but especially in older persons the cause may be endarteritis and thrombosis. Emboli do not lead to early thrombosis and may pass farther along a vessel after a time either with or without permanent retinal damage.

The reduction of the size of the affected arteries is due to interference with the blood supply of the arterial wall resulting in degeneration or to accommodation of the arterial wall to the reduction in the blood column. Retinal pallor is caused by oedema lasting for from one to two weeks and followed by necrosis.

In complete obstruction the visual field is maintained only around the nerve head. Central scotomata occur very early on account of macular anemia.

The macular region is the most vulnerable but if the duration of the obstruction is short or there is normal circulation nearby some central vision may return.

Spasm of the artery may be primary or secondary to disease of the arterial walls.

SAMUEL A DUEB M D

Benedict W L. Retinoblastoma in Homologous Eyes of Identical Twins. *Arch Ophth* 1929 u 345

The occurrence of neuroblastoma in homologous eyes of twins has not been reported previously so far as the author could learn by a search of the literature. In 1922, twin girls were brought to the Mayo Clinic one of whom had a neuroblastoma in the left eye and the other a similar tumor in both eyes. There were several reasons for considering these girls identical or enzygotic twins. The occurrence of the neuroblastoma in a similar situation in the left eyes lends support to the theory that these tumors develop from fetal rests that probably go back to the single ovum from which such twins develop.

In the case of one child the left globe was removed together with as much of the optic nerve as could be obtained. Death occurred a year later.

In the case of the other child the left eye was enucleated and radium was used on the right eye until it could be determined whether the growth was extending toward the disk. The operation was performed on the same day as that on the twin sister. The optic nerve, which was removed with the globe appeared to be normal. Subsequently the child entered the public school and kept near the head of her class until vision began to fail five years later because of the development of a posterior cortical cataract. Six years after the operation the anterior part of the lens was clear but on the posterior capsule there was a dense layer of granular substance which was more dense at the center. The large vessels of the fundus could be seen but the details of the disk were obscured. In the inferior temporal quadrant there was an irregular area 2 by 3 disk diameters which gave a white reflex. This area was not elevated and although not clearly focused was apparently on the same level as the fundus. No large vessels were seen in that region and no other lesions were present. Transillumination was then good. The tumor had been destroyed by the radium. The increasing cloudiness of the lens was characteristic of complicated cataract seen in eyes with extensive choroidal destruction and probably was not due to the direct action of the radium.

EAR

Martin C L. Roentgenological Studies of the Mastoid in Infants. *Am J Roentg* vol 1929 xiii 431

The author believes that in suspected mastoiditis in infants roentgen examination is of value. He states that after the age of six months a cavity having the shape of the mastoid can be demonstrated below the tegmen tympani and behind the external auditory meatus. This cavity varies in size and by the ninth month may measure $\frac{1}{4}$ in in diameter and show definite cell structure although such excessive development is unusual. Diploetic mastoids are probably diploetic from the beginning whereas cellular mastoids begin as single large cavities which slowly increase in size and usually first show a cellular structure between the ninth and nineteenth months.

The presence of pathological conditions in the mastoid can usually be detected in good roentgenograms after the age of six months but double infections often make the interpretation of the roentgen findings difficult.

Martin employs the Law technique, using a cassette placed flat on the table and roentgenographing both mastoids on the same film. The baby's cheek is placed flat against the cassette the tube is tilted 15 degrees toward the feet and a long slender cone is employed. The baby is held firmly by three assistants and one eighth second exposures are made with a 3 in parallel gap and 80 ma passing through the tube during an expiratory cry.

MANFORD R. WALTZ M D

NOSE AND SINUSES

Fig. F A Stenosis of the Nasopharynx *Arch Otolaryngol* 1929, 7 480

Cicatricial stenosis of the nasopharynx is rare. In the past, the condition has been difficult to treat as evidenced by the great variety of procedures advocated for its relief. Many of the proposed operations are of little practical value. A few when properly carried out will restore the nasopharyngeal lumen satisfactorily. Most of the reports in the literature give little clinical information especially as regards end results.

Eighteen cases of nasopharyngeal stenosis have been observed in the Mayo Clinic. The causes in these cases and the number of cases in each etiologic group were as follows: tonsillectomy and adenoidectomy four; tonsillectomy alone two; hereditary syphilis three; acquired syphilis two; an indeterminate inflammatory process two; rhinoscleroma two; diphtheria one; caustic (sulphuric acid) one; and a congenital abnormality, one.

The symptoms of nasopharyngeal stenosis depend on the degree of obstruction. Often the patient accommodates himself to breathing through a very small opening and may present practically no symptoms, even in the presence of marked contraction. With complete or almost complete atresia the symptoms are primarily those of nasal obstruction. The lack of ventilation in the nose together with blocked drainage, produces changes in the nasal mucous membrane which may be followed by infection of the accessory sinuses or deafness. The sense of smell is interfered with and if the condition comes on early in life, developmental changes in the fauces and the contour of the nasopharynx and possibly of the nasal fossae may result. The voice loses its normal resonance and irritation of the pharynx and lower respiratory passages may be caused by the continuous breathing through the mouth.

The most obvious method of treatment and without doubt the one resorted to most commonly in the past is incision of the cicatricial diaphragm and subsequent dilatation. Yet almost invariably, this procedure fails. The opening made usually contracts to such a marked extent that it becomes useless for respiration when the dilatation is stopped and often when it is continued. However in cases of congenital stenosis this method of treatment has proved entirely successful. Incision with subsequent cauterization of the raw surfaces with the galvanic cautery or some type of chemical cautery is not a rational procedure. After reestablishment of the communication between the oral pharynx and nasopharynx the wearing of a prosthetic appliance held in place by dental bands has been tried. Isaacs reported a case so treated but did not mention the end result. In the Mayo Clinic such an appliance was used in one case to hold a skin graft in place after the scarred attachment of the soft palate had been dissected from the posterior pharyngeal wall. The graft did not

take, and the stenosis recurred. Diathermy has been used in the treatment of nasopharyngeal stenosis with some success, probably due to the fact that the scar following surgical diathermy is often less dense and has less tendency to contract than the scar following most cutting operations or inflammatory conditions. This has been noted in the treatment for keloids about the neck.

In some of the numerous plastic operations which have been devised for the relief of nasopharyngeal stenosis flaps of mucous membrane from the adjacent cheeks, soft palate and pharyngeal wall are utilized. In others large skin flaps are introduced through a pharyngotomy opening. Curtis reported a case of dense cicatricial stricture of the pharynx due to syphilis which was treated satisfactorily by the introduction of a skin flap through a suprathyoid pharyngotomy opening. Mackenty recently described an operation for the relief of cicatricial stenosis of the nasopharynx that he has used successfully in several cases. His procedure consists in turning up two flaps of mucous membrane from the posterior wall of the pharynx, one on either side of the stenosed pharyngeal opening. Although the tissue constituting the flaps is taken from the pharyngeal wall the base of each flap is situated at and formed by the posterior border of the soft palate. The flaps are doubled over onto the denuded superior or posterior surface of the soft palate, and the operation is completed by suturing them in place.

Perhaps the simplest and in most cases the most uniformly successful procedure is that presented by Nichols. Nichols concluded that the reason the opening made by incision of the scarred membrane invariably contracts was that healing always starts at the apices of this wound and progresses toward the median line. Drawing an analogy from cases of syndactylism treated by the insertion of a seton at the base of the web until cicatrization takes place and then incision to this point he inserted a silk suture through the small nasopharyngeal opening well into the lateral extent of the region of scarring, tied this suture and left it in place until a cicatrized tract developed and then freed the posterior border of the soft palate from its attachment to the pharyngeal wall out to this point. In 1896, before the American Laryngological Association he reported a group of thirteen cases treated successfully by this method.

In the last six cases of cicatricial stenosis of the nasopharynx seen in the Mayo Clinic essentially the same procedure as that described by Nichols has been employed with uniform success. The only variation consisted in clamping a small lead weight over the ends of the suture and allowing the suture to cut through of itself which usually required from one to two weeks. The suture and weight are almost invariably swallowed. The possibility of aspiration has been considered but thus far no difficulty of this kind has been experienced. After the suture cuts through it is replaced by another taking a wider lateral bite. Subsequent dilatation with rubber

tipped Kelly forceps has been employed in most cases regardless of the primary method of treatment. In a few cases a soft rubber tube with a self retaining cuff at either end was inserted for short periods with marked benefit.

NECK

Wingate H F Two Cases of Riedel's Chronic Thyroiditis *Brit J Surg* 1929 xvi 264

The author reports the cases of two women forty six and thirty four years of age respectively. The chief complaint was dyspnoea. In both cases there was considerable enlargement of the thyroid but in one case the gland was smooth and firm, and in the other smooth and cystic. The symptoms had been present for five and six years.

The microscopic findings are described in detail and shown by photomicrographs. The chief findings were well defined lymph follicles and giant cells of a foreign body type the latter embedded in degenerating acini.

Wingate considers the condition to be a non tuberculous granuloma. *John H Woolsey M D*

Webster B Studies in the Reactions of Simple Goiter to Iodine *Bull Johns Hopkins Hosp* Balt 1929 xiv 215

In experiments on rabbits with simple hyperplastic thyroid glands the author found that potassium iodide injected intraperitoneally in quantities of 5, 25, and 125 mgm produced changes in the quantity of thyroid hormone elaborated as indicated by changes in heat production. These changes appeared to vary directly within certain limits with the amount of available iodine as did the extent of the glandular involution as determined by biopsy and histological study. The relationship apparently held true until involution was nearly complete.

W N Rowley M D

Youmans J B The Incidence of Goiter Among Adults in Nashville Tennessee *South W J* 1929 xxi 966

This article is based on the results of the examination of 500 patients coming to the out patient department of the University Hospital Nashville Tennessee. All of these patients had been born and had lived in or near Nashville. Their ages ranged from fifteen to eighty two years. Goiter was found in 85 the incidence of this condition being therefore 17 per cent. The incidence of goiter was 4 times higher in women than in men and was slightly lower among the colored patients than among the white patients. In women it was highest in the fifth decade of life, and in men in the second and third decades.

The author suggests that while the occurrence of goiter in the region of Nashville may be due in part to primary iodine deficiency, improper diet and poor hygienic conditions may also be factors.

FRANK E BERRY M D

Burch F E The Exophthalmos of Graves Disease *Minnesota Med* 1929 xii 668

Burch reviews the various eye signs associated with Graves disease and reports a case with definite exophthalmos in which all other signs of Graves disease were lacking. Four years later exophthalmos was still present but there was never any sign of thyroid intoxication.

Following a review of various theories relative to the mechanism of exophthalmos in Graves disease Burch reports a case of malignant exophthalmos appearing two years after thyroidectomy for hyperthyroidism in which both eyes were eventually enucleated. *EARLE I GREEVE M D*

Lahey F H End Results in Thyrocardiacs *Ann Surg* 1929 xc 750

The surgical management of patients with thyroid disease has shown striking development in the last decade. There is almost universal acceptance of surgery as the treatment of toxic goiter. The author states that at his clinic they have been particularly interested in the cases of toxic goiter showing cardiac failure and have come to designate such cases as 'thyrocardiacs'.

As a result of his experience with thyroid disease Lahey believes that thyroidism in itself does not cause heart disease and that there is no heart state that can be designated as a true thyroid heart. This belief is strengthened by the fact that young persons with intense hyperthyroidism over a considerable period of time present no signs of cardiac decompensation. Cases in which auricular fibrillation and signs of heart failure have developed fall into the group of thyrocardiacs. Auricular fibrillation and cardiac decompensation associated with hyperthyroidism occur most commonly during and after middle age and rarely in young persons. This fact that suggests that cardiac failure in case of hyperthyroidism is due to previous injury of the heart.

The diagnosis of hyperthyroidism associated with and resulting in heart failure is sometimes difficult as the more severe and urgent the symptoms of cardiac failure the more obscure are the symptoms of thyroidism. The symptoms of thyroidism in elderly persons are usually not those of the activation so typical in young persons but those of apathy. There are two distinct types of reaction in hyperthyroidism first that of activation with the classical picture of the disease and second, apathy which is represented by the more sluggish quiescent response to intoxication. Failure to appreciate the unobtrusive dangers of this apathy of varying degree in thyroidism has not infrequently been one of the causes of mortality in thyroid surgery.

At the Lahey clinic, 138 patients belonging to this group have been operated upon. Five died in the hospital making the operative mortality 3.6 per cent. With the exception of 4 cases every thyrocardiac coming into the clinic was operated upon and practically all were operated upon under general anesthesia induced with ethylene. This in

dicates that there are essentially no thyrocardiacs with too marked decompensation to withstand subtotal thyroidectomy.

Of 101 patients traced and living more than three and a half years after the operation 95 have been restored to the full function which they had before the onset of the hyperthyroidism, 4 are partially incapacitated and only 2 are completely incapable.

R. V. B. SMITH M.D.

Richardson E. P. Aub J. C. and Bauer W. Parathyroidectomy in Osteomalacia. *Ann Surg* 1929 XC 730

The extent to which disturbances of endocrine function may underlie generalized disease has long been a matter of interest. The framework of the bones is not a static structure but one in which active metabolism is taking place according to disuse or activity or in response to demands made upon it through variations in the inorganic salt metabolism. The relationship of osteomalacia to repeated pregnancies and lactation and to an abnormal diet is well known. Bone atrophy may occur in response to increased calcium and phosphorus metabolism in thyrotoxicosis. Decalcification of bone may be brought about by the long administration of parathyroid extract. Hoeffeinz collected from the literature forty-four cases in which parathyroid enlargement usually of the nature of hyperplasia was found at autopsy. Among these cases skeletal disease was found in twenty-seven: osteitis fibrosa in seventeen, osteomalacia in eight, and rickets in two.

The authors report a case of hyperparathyroidism referred to them by DuBois for further metabolic studies. The diffuse character of the change in the bones suggested osteomalacia although cystic cavities similar to those of osteitis fibrosa were present.

The administration of a potent parathyroid extract causes a rise in the serum calcium, a rise in the excretion of calcium in the urine, a fall in the serum phosphorus and a rise in the excretion of phosphorus in the urine. If this treatment is continued for a sufficient length of time there results a decalcification of bone which can be demonstrated by the X-ray.

With deficiency of the parathyroid glands the reverse results—a fall in the serum calcium, a fall in the excretion of calcium in the urine, and a rise in the serum phosphorus and a fall in the excretion of phosphorus in the urine.

The changes in the calcium and phosphorus metabolism observed in the case reported were approximately equivalent to those found in normal persons receiving 100 units of Collip's parathyroid extract per day.

The conclusion was drawn that the patient was suffering from hyperparathyroidism and that the osteomalacia was secondary to the associated abnormal loss of calcium.

At a first operation the right lobe of the thyroid was exposed, freed and turned inward and the inferior parathyroid gland removed. On section, the latter was found to be normal. At a second operation another parathyroid gland was removed.

After a period of two years the patient stated that he felt very well, was able to get about without difficulty and had been working for ten months. Roentgenograms taken for comparison with previous plates showed a marked increase in calcium in the bones.

The authors state that there is very little evidence that the removal of the two parathyroid glands had anything to do with the result. They emphasize the importance of a diet high in calcium and phosphorus, especially the latter, when it is apparent that there is a drain of calcium from the body.

R. V. B. SMITH M.D.

Horne J. Cancer of the Vocal Cords. Difficulties in Diagnosis and Fallacies in Statistics. *Proc Roy Soc Med Lond* 1929 XXII 1547

Horne says that of all diseases of the larynx, carcinoma of the vocal cords is diagnosed as present when it is absent more frequently than any other. It is diagnosed by elimination. Tuberculosis is ruled out first, then syphilis and benign tumor. Sections for microscopic examination must be cut at a right angle to the cord and deeply as otherwise errors are frequent.

EARLE I. GREENE M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Pfingst A O and Spurling R G Intracranial Aneurisms Their Role in the Production of Ocular Palsies *Arch Ophth* 1929 11 391

Ocular palsies are frequent in cases of intracranial aneurism as the arteries at the base to which the motor nerves of the eye are in close proximity, are those most often involved. There is seldom much clinical evidence of intracranial aneurism unless there is more or less hemorrhage.

The authors report two cases in each of which there was a two-year history of recurrent headaches with diplopia and ptosis and finally an apoplectic attack.

In both examination revealed monocular palsy, ptosis, papilloedema and rigidity of the neck, and in one case hemianopsia. In one case the spinal fluid was bloody and under increased pressure. In the other it was clear but X-ray examination revealed, just to the right of the posterior edge of the pituitary fossa, a calcified area which was believed to be a lumen deposit in either an aneurism or a small hemorrhagic area. No other neurological signs were present.

Both of the patients are still alive.

KURT H HORCK MD

Bislock A and Bradburn H B Trauma to the Central Nervous System Its Effect on the Cardiac Output and Blood Pressure An Experimental Study *Arch Surg* 1929 111 725

The authors carried out three series of experiments on dogs to study respectively the effect of trauma on the cerebrum, cervical cord and thoracic cord. At definite stages in the operations determinations were made of the pulse rate, temperature, arterial oxygen, venous oxygen, maximal and minimal blood pressure, oxygen consumption, and output of the heart.

In contrast to the observations in shock produced by hemorrhage in which the cardiac output falls tremendously before the mean blood pressure falls it was found that after trauma there was no definite fall in the cardiac output without a simultaneous fall in the blood pressure. The authors conclude that probably for this reason a fall in the blood pressure is not as serious during operative procedures on the central nervous system as it is during or after other types of operations or after hemorrhage. They believe that their findings emphasize the futility of attempting to designate by the word 'shock' or any other single term the varying conditions which result after trauma and hemorrhage.

KURT H HORCK MD

Batado M and Carrillo R Decerebrate Rigidity from a Cyst of the Pineal Gland (Rigidez decerebrada por quiste de epífisis) *Arch argent de neurol* 1929 14, 167

The case reported was that of a boy twelve years old. The illness had begun two years previously with progressive loss of vision which had finally terminated in complete blindness. For ten months the patient experienced difficulty in walking having a tendency to fall to the right. For four months he had been unable to walk at all and for twenty six days at the beginning of the latter period he had been somnolent. Also during the latter period he had attacks of convulsions and conjugate deviation of the head and eyes to the right. He had lost a great deal of weight. His mind and memory were better than usual for boys of his age. During the last few days he had suffered from headache and vomiting. He presented rigidity of such a nature that when his arms and legs were placed in a given position they remained there for as long as a quarter of an hour. Passive movements were relatively normal except for slight rigidity that had to be overcome to begin the movement.

Operation revealed a cystic tumor originating in the pineal gland. After the operation the temperature and pulse rate increased progressively and death occurred on the twentieth day.

As the rigidity was bilateral and the only bilateral lesions found involved the hypothalamic and the red and black nuclei, the rigidity must have been due to pressure on these centers. The cyst was extensive in its growth and was lined by the cells of a pineal tumor. The spasticity of the lower limbs was due to lesions of the myelin fibers at the foot of the two cerebral peduncles. Attacks of risus nocturnus also mentioned in the history were doubtless due to destruction of the right corpus striatum.

AUGUST G MORGAN MD

Wakeley C P G and Allen I M Secondary Hydrocephalus as a Factor in the Diagnosis and Localization of Intracranial Tumors with Its Investigation and Treatment *Brit J Surg* 1929 26 278

The authors discuss the influence of secondary hydrocephalus on the diagnosis and localization of intracranial tumors, the means whereby the presence of hydrocephalus as a complication and the exact site of the tumor may be determined and the influence of hydrocephalus upon the choice of treatment.

The mechanisms suggested to explain the development of hydrocephalus in the course of intracranial tumors are:

1. Direct mechanical obstruction of the circulation of the cerebrospinal fluid due to localization of the

tumor in such a position that it directly impinges upon the channels through which the fluid normally circulates

2 Pressure upon the great vein of Galen, either directly or indirectly, and consequent increased production of cerebrospinal fluid by the choroid plexus

3 Distortion of the brain stem by lateral displacement and torsion and secondary obstruction to the circulation of the cerebrospinal fluid at its most vulnerable point in the aqueduct of Sylvius by pressure of the hindbrain against the unyielding edge of the tentorium cerebelli

4 Obstruction of the circulation of the cerebrospinal fluid near the foramen magnum

In cases of secondary hydrocephalus developing indirectly, the order in which the symptoms and signs appear is of paramount importance. True localizing signs are noted first if the part affected is not a silent area.

The chief symptoms of secondary hydrocephalus are essentially those which are usually regarded as the general symptoms of a cerebral tumor. They are primarily the symptoms of increased intracranial tension and may be due to conditions other than hydrocephalus. They are headache, vertigo, vomiting, eye disturbances including papilloedema, mental symptoms, a subnormal temperature, deafness and tinnitus, reduced muscle power, tone and reflexes in the absence of involvement of the motor paths, occasional tremors, incontinence of urine or feces, and the various false localizing signs, the most important of which are cerebellar signs, evidence of lesions in the frontal lobes, changes in the visual fields, minor signs of involvement of the pyramidal tracts and signs of pituitary dysfunction.

The differential diagnosis of secondary hydrocephalus includes renal disease, severe anemia, lead poisoning, diabetes mellitus, the cerebral form of disseminated sclerosis, transverse myelitis with papilloedema and conditions which produce increased intracranial pressure such as massive tumor growth, oedema of the brain and general circulatory changes.

In discussing secondary hydrocephalus as a factor in localization, the authors point out that all localizing symptoms which develop after the appearance of the general symptoms of increased intracranial pressure must be regarded with suspicion and that they may be used for localizing the lesion only if they are clear and unmistakable evidences of a focal lesion.

The investigation of a case in which secondary hydrocephalus may be present is carried out by careful and detailed clinical examination of the nervous system, puncture methods including lumbar puncture, cisternal puncture and ventricular puncture and X-ray examination including ventriculography.

Apart from the information obtained by ventricular estimation, the examination of a patient suffering from secondary hydrocephalus by puncture

methods usually produces evidence of a negative character.

In the X-ray examination skull changes, calcifications, pineal shift, and displacement of the falx cerebri are considered. The authors discuss the technique of ventriculography, the interpretation of ventriculograms and the complications of the procedure and their treatment in great detail. They emphasize that ventriculography should be employed only when all other methods of examination have failed to establish a diagnosis and to localize the lesion and that in this procedure ventricular puncture is to be preferred to spinal puncture.

Observations at operation are useful in confirming a diagnosis of secondary hydrocephalus.

The authors conclude that the treatment of secondary hydrocephalus should be instituted as early as is compatible with a thorough study of the case. It should provide for the relief of pressure above the tentorium even when the local lesion is situated in the posterior fossa of the skull. When the symptoms of a subtentorial lesion are present this result is best achieved by the operation for mobilization of the tentorium.

Seven cases with false localizing signs which made the diagnosis of the site of the lesion doubtful are reported in considerable detail with autopsy findings.

DAVID J. IMPASTATO M.D.

Wakeley C. P. G. A Case of Fibrosarcoma of the Cervical Meninges. *Brit J Surg* 1919 xvi 319

The case reported was that of a man twenty eight years of age whose symptoms had begun two years before he was seen by the author. Examination revealed loss of sensibility to pain and temperature in the left half of the trunk below the second intercostal space, throughout the left leg and in the inner half of the left arm, loss of the superficial abdominal reflexes, ankle clonus on the right side, and atrophy of the small muscles of the right hand.

Laminectomy revealed an encapsulated tumor of the cervical meninges (intradural) occupying the right posterolateral aspect of the cervicodorsal cord at the level of the lower three cervical and upper two dorsal vertebrae. The tumor was removed.

On microscopic examination it was found to be a fibrosarcoma showing areas of hyaline degeneration. Two days after the operation the sensory changes had disappeared. Five years later sensibility and muscular development were normal and equal on both sides.

DAVID J. IMPASTATO M.D.

SPINAL CORD AND ITS COVERINGS

Babtschin I. The Technical Errors and Complications Occurring in the Performance of Chordotomy (Ueber die bei der Ausführung der Chordotomie vorkommenden technischen Fehler und Komplikationen). *Beitr. klin. Chir.* 1929 cxlvi 721.

Chordotomy division of the central sensory nerve fibers in the region of the spinal cord where the

anterolateral bundles of Gower intersect is done for the relief of pain of various types and origins. As the thermosensory fibers run in the same fasciculus, the division of the tract of Gower is followed simultaneously by a loss of sensitivity to temperature as well as to pain on the opposite side below the site of the chordotomy. Tactile sense and the different types of muscular sense are not disturbed. By means of chordotomy large areas, even half of the body, may be anesthetized.

The following untoward results may occur when the chordotomy is not performed properly:

1. Paralysis of the sound extremity with cessation of the pain in the diseased extremity. This occurs when the pyramidal tracts dorsal to the Gower nerve tract are cut simultaneously. In four cases the author noted a transient spastic paralysis of the sound extremity similar to Brown Sequard paralysis and in three cases an isolated Babinski reaction.

2. Recurrence of the pain on the diseased side due to insufficient division of the sensory spinal cord fiber.

3. Recurrence of the pain on the diseased side and the development of a spastic paralysis on the other side due to too great extension of the incision dorsally so that only a part of the sensory fibers of Gower's bundle and a part of the motor fibers of the pyramidal tract were cut.

Complications of short duration are (1) ring formed girdling pain which develops at the level of the chordotomy on the corresponding or opposite side and ceases after from one to three weeks, (2) urinary retention lasting for from one to two weeks and (3) intestinal paralysis which after bilateral or repeated chordotomies may persist for from two to five days.

In describing the technique the author states that the patient should lie on the diseased side. The vertebral arches must be completely removed to their points of insertion. In unilateral chordotomy it is sufficient to remove from two to two and a half arches but in bilateral chordotomy no fewer than three must be removed in order that the two incisions will be made at different levels in different segments. When the pain is localized below the diaphragm the chordotomy should be carried out at the level of the fourth and fifth thoracic segments, which correspond to the third and fourth thoracic vertebrae. When the pain is higher up the incision must be made correspondingly higher and at a point two or three segments above the upper limit of distribution of the pain. The first and second thoracic segments must be avoided as otherwise through injury of the cilio spinal center the Horner syndrome will appear and there may be a reflex effect on the heart. The fourth cervical segment should be avoided as it is the center of the phrenic nerve. The dorsal sac must be opened without injury of the arachnoid.

This exposure provides a good view of the cord and nerve roots and the firmness of the denticulate

ligament prevents the formation of postoperative adhesions between the spinal cord and the dura. The arachnoid should be divided bluntly with a Kocher sound between the anterior and posterior spinal nerve roots. In this manner the lateral column will be exposed. If the arachnoid is divided in the midline, the cut edges form longitudinal folds at the lateral surfaces and may simulate the denticulate ligament and even the anterior spinal nerve roots. Injury of the delicate spinal cord vessels must be avoided as the least hemorrhage discolors the tissues and makes orientation difficult. The cord should be turned 90 degrees. This is usually done by traction on the denticulate ligament which is grasped outside the arachnoid and divided immediately at the dura. If the denticulate ligament tears because of insufficient development or if the cord is only slightly movable the pia mater may be grasped superficially with fine ophthalmological needles. This can be done without injury of the pyramidal tract only in the region of Gower's tract. Traction on the posterior roots must be avoided as it will cause severe neuralgia. If it is unavoidable the corresponding root should be divided proximally to the site of the injury. In extreme cases the delicate anterior root may be used to turn the spinal cord but it is apt to tear.

Most important is the accurate determination of the limits of the incision and the technique by which it should be made. Special care is necessary to determine the posterior limit which runs immediately along the pyramidal tract. In this determination the surgeon should keep to the midline between the sites of insertion of the posterior and anterior roots in the cord. The denticulate ligament should be used only as a general guide. The anterior border usually runs along the line of exit of the anterior roots about 3 mm from the posterior border. If the anterior root is adherent to the cord it is difficult to find and must be traced upward from its site of exit from the dural sac to the cord. Sometimes it can be recognized from the accompanying fine blood vessel which runs obliquely along the lateral surface of the cord and shows the direction of the root from in front above backward and downward. Displacement of the anterior limit of the incision about 1 mm ventrally is of no importance but posteriorly such a displacement may lead to incomplete division of the sensory tracts and recurrence. The anterior limit of the chordotomy must reach the site of insertion of the anterior spinal nerve roots.

The setting of the limits and the technique of chordotomy are easiest at the level of the sites of exit of the anterior and posterior roots from the spinal cord. If when the cord is replaced the cut surface especially its posterior limit is not visible the incision has been properly made. If even a small edge is visible the pyramidal tract has been injured.

The depth of the incision varies between 2.5 and 3.5 mm. The analgesia depends not upon the level but upon the depth of the chordotomy. The lateral column may be divided from without inward or

from within outward. The author uses a chordotome with a blade 3 mm long so that he can divide the column from within outward. He inserts the chordotome its full length into the posterior border of the incision and brings it out at the anterior root, the entire mass of the column being thereby divided with the peripheral fibers which lie next to the pia mater. A sign of complete division of the column is the deep separation and moderate gaping of the wound edges along the entire cut surface. All coarse sawing and pulling movements must be avoided as a punctate escape of blood may lead to edema and necrosis.

After the cord has been turned and the area of incision has been determined the chordotomy can not be delayed too long as it is not easy to hold the desired place by traction on the delicate denticulate ligament for any length of time and the operative field is soiled by the trickling of blood or spinal fluid. The extent of the incision must be determined with special care in cases of stable benign diseases in which pain is often the only symptom. The largest incision is indicated in cases of malignant tumor in which a bilateral chordotomy is often indicated if a spread of the disease to the other side is expected to occur soon. In such cases injury to the pyramidal tract is of secondary importance as most of the patients are confined to bed. The greatest care and conservatism are necessary in cases of painful amputation stumps and in the cases of paralytics who can still move about. The correct extent of the incision cannot always be determined the first time but if necessary the chordotomy may be repeated at a higher or lower level. Chordotomy should be performed only by surgeons who are experienced in operating on the spinal cord. ERICH HEMPEL (Z)

Oppl W A. Experiences with the Poussepp Operative Treatment of Syringomyelia (Erfahrungen mit der operativen Behandlung der Syringomyelie nach Poussepp). *Arch f klin Chir* 1929 clv 416

The changes in syringomyelia consist in a proliferation of glomatous masses in the gray substance of the spinal cord or its central canal. The glomatous masses undergo cystic degeneration. Especially the cervical portion of the spinal cord is affected.

Poussepp has called attention to the fact that the central canal of the spinal cord becomes dilated as the result of the collection of cerebrospinal fluid and that this fluid exerts pressure on the spinal cord from within thereby producing some of the symptoms of syringomyelia. Poussepp proposed opening the central canal and draining the fluid. He performed a laminectomy at the level of the sixth and seventh cervical and the first thoracic vertebrae, split the dura and opened the central canal from behind through a small vertical incision about 4 mm lateral to the midline. After the canal had been emptied the dura was firmly sutured and the muscles and skin were closed tightly. The author reports seven operations of this type performed on six patients with no mortality.

The syndromes of syringomyelia may be divided into three groups: (1) weakness and subsequent atrophy of the muscles of the upper extremities due to involvement of the gray substance of the spinal cord especially the anterior horns, (2) disturbances of pain and temperature sensibility due to involvement of the posterior horns or interruption of the conduction paths for pain and temperature sense anterior and posterior to their site of crossing, and (3) trophic disturbances due to involvement of the sympathetic centers of the spinal cord (lateral horns). Not rarely these symptoms are especially marked in one of the upper extremities.

The one sidedness of the clinical symptoms determines the treatment. The central canal should be opened from the side of the most pronounced changes. As the symptoms may pass on to the lower extremities it must be assumed that the central canal is dilated for a considerable distance. Nevertheless this canal should never be opened in the lower portion of the cord but always in the cervical portion. The result of the operation depends first on the time of the intervention. The spinal cord must not have been damaged so much by the pressure that it cannot recover.

Poussepp first does an exploratory puncture and then opens and probes the central canal, but the author never probes and rarely does an exploratory puncture. As the posterior bundles of the cord are usually left intact by the disease the canal should be opened outside of the posterior bundle and the pyramidal tracts.

The symptoms of syringomyelia are pre eminently those of an affection of the anterior portion of the spinal cord. The cord is first compressed anteriorly. The clinical symptoms are predominantly unilateral. This fact cannot always be explained by the formation of glomatous tumors as there may be one sidedness without such tumors. Hypothetically, it may be explained by variations in the spinal cord. The mass of the anterolateral portion of the cord may be smaller or larger and may be further to the right or the left side. This explains why patients in whom the mass of the anterolateral portion of the cord is smaller on the right side suffer first from pressure in the right central cavity and those in whom the mass of the anterolateral portion of the cord is smaller on the left side suffer first from pressure in the left central cavity when the central canal becomes dilated.

The author believes that the spinal cord canal should be opened from the side of the greatest destruction, the greatest compression and the greatest protrusion of the cord. As opening of the canal anteriorly through the anterior commissure is technically difficult and destroys the site of crossing of the conduction paths for pain and temperature, as with posterior opening it is necessary to pass through the healthy posterior bundles and as entrance from behind and laterally (in the region of the pyramidal tracts) will cause spastic motor disturbances it is necessary to enter through the

antero external basal bundles and the anterior horn and open the canal immediately anterior to the denticulate ligament. The line of incision therefore corresponds to that of the maximal disturbances and the site of greatest involvement. The technique of finding the anterolateral bundle is the same as in chordotomy, but the incision must be vertical in order that injury to the gray matter will be minimal.

In two of the author's cases the wound separated after removal of the sutures probably because of a trophic disturbance of the dura. Therefore the sutures should be left in longer. A second complication observed by the author was a hematoma in the muscle layer and a collection of fluid perhaps cerebrospinal fluid, which trickled through the sutures of the dura. In one case Oppel noted disturbances referable to the pyramidal bundles even though these structures had not been touched. These bundles are exceedingly sensitive and the inflammatory process around the wound canal may have spread to the pyramidal tracts. It is possible also that a slight accidental disturbance of the pyramidal

tracts during the turning of the spinal cord at the denticulate ligament in the opening of the central canal through the antero-external approach may produce spastic phenomena below the site of operation.

Of the six patients operated upon by the author one showed no improvement. The spinal cord must therefore have been partially destroyed. In one case improvement was uncertain because of psychic defects. In another case sensation was improved but disturbances of muscular function in the right upper extremity appeared as a result of technical errors. In the three remaining cases the result was excellent.

In conclusion the author states that a final opinion regarding the method of opening the central canal is still impossible but by the use of the typical technique of Poussepp and the anterolateral route an extremely severe and incurable disease has become amenable to operative treatment and excellent results can be achieved in cases not too far advanced.

ERICH HEMPEL (Z)

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Bloodgood J C Chronic Cystic Mastitis of the Diffuse Non Encapsulated Cystic Adenomatous Type *Ann Surg* 1919 xc 836

The condition discussed by Bloodgood has been known as Reclus disease 'Schimmelbusch's disease' diffuse papillary cystadenoma and cobblestone breast. Up to 1906 it was believed to be associated with cancer in at least 50 per cent of the cases. Bloodgood is now of the opinion that it is associated with cancer only incidentally and is not a precancerous lesion. Its cause is not known.

In a small percentage of cases there is a discharge from the nipple. Intermittent retraction of the nipple is practically diagnostic but occurs in less than 10 per cent of the cases. On palpation a shotty condition of the breast is noted in addition to increased firmness of the tissue. The edge of the breast is smooth and sharply defined, not unlike the sharp edge of the liver. When the breast is raised away from the chest wall it curves and feels on palpation like a saucer with a thickened edge. The condition may be more advanced in one breast than in the other. One breast may be simply shotty without a definite edge and not yet 'saucer like,' while the other breast may have reached the saucer stage.

The pathological process first appears in the upper and outer quadrant of both breasts. It always involves more than a quadrant and encroaches first more on the upper and inner quadrant than on the lower and outer quadrant. The lower and inner quadrant seems to be the last to become involved. Even over a fully developed zone there is no atrophy of the subcutaneous fat or dimpling of the skin except when there are signs of inflammation of the skin. As a rule the nipple is free but there may be congenital contraction of one or both nipples or rarely intermittent retraction. Unilateral retraction of the cancer type has been present in less than 3 per cent of the cases.

Under the term chronic cystic mastitis may be grouped two distinct conditions. In one a large single or multiple cyst predominates in the gross appearance while in the other there are minute cysts or dilated ducts or papillary cystadenomatous areas. The large cysts include single blue domed cysts, multiple blue domed cysts and gray domed cysts of the galactocoele type. These cystic tumors constitute what has been called the lumpy breast in contradistinction to the shotty breast.

Other chronic lesions of the breast noted during a study of diffuse chronic cystic mastitis were traumatic mastitis, the caked breast of the pyogenic mastitis of pregnancy or lactation, tuberculous mastitis, metastatic mastitis occurring after infections

the diffuse comedo adenocarcinoma, and diffuse carcinoma of the acute type, which is morphologically the most malignant type.

In conclusion Bloodgood emphasizes that chronic cystic mastitis of the diffuse non encapsulated cystic adenomatous type is not a precancerous lesion any more than the lactating breast but may present microscopic pictures that are difficult to differentiate from those of cancer. He states that as today more and more women are coming for examination immediately after the first symptoms are noted a greater number of breasts with chronic cystic mastitis of this and other types are being sacrificed. He is confident that if surgeons and pathologists would give more attention to the study of chronic cystic mastitis fewer women would be mutilated. In order to give all women who may have a cancerous lump in the breast at least a 70 per cent chance of cure we must bring them all under observation within a month of the time that the condition is first noted. In probably 70 per cent of the cases operation can be decided against by palpation alone. Of the 30 per cent in which the breast must be explored be-nignancy of the lesion can be recognized in one half or more by gross inspection and examination of frozen sections. MANUEL E. LICHTENSTEIN M.D.

TRACHEA, LUNGS, AND PLEURA

Hellsting C Cases of Thoracoplasty from the Osteråsen Sanatorium During the Period from 1919 to 1928 (Faelle von Thorakoplastik aus den Sanatorium Osteråsen in den Jahren 1919-1928) *Acta med Scand* 19 91v 521

The author reviews forty cases in which thoracoplasty was done with special consideration of the indications for the operation and the results. The surgeons were Key, Perman, Nystrom and Haggstrom. Key does a subperiosteal resection of the ribs whereas Nystrom removes the periosteum on the outer side with the rib and separates the rib on the inner side usually between the parietal pleura and the periosteum, the periosteum being thereby almost completely removed.

The indications for thoracoplasty are almost the same as those for pneumothorax except that thoracoplasty is usually to be considered only when pneumothorax cannot achieve the desired result because of adhesions. The condition produced by pneumothorax is reparable, that is the lung can regain its function partially should it be necessary to stop the treatment because of an unfavorable effect on the normal lung. Thoracoplasty renders the lung permanently functionless.

Operation should be performed only in unilateral cases in which the process in spite of sanatorium

treatment, continues to spread or does not recede. 'Unilateral cases' are not only cases in which the better side is pathologico-anatomically normal but also cases in which there are no clinical signs of disease on the other side or disease known to have been present on the other side is regarded as cured.

The most important changes in the worse lung is contraction evidenced by flattening and diminished mobility of the thorax and displacement of the trachea. Roentgenographically, contraction is revealed by narrowing of the interspaces between the ribs, displacement and dilatation of the trachea, displacement of the mediastinum with the heart, and high position of the diaphragm. Contraction is considered the sign of a good reaction. It shows that healing by the formation of connective tissue is taking place. This healing process already begun is favored by thoracoplasty. Therefore the ideal cases for thoracoplasty are those showing more or less contraction on the worse side. Of the forty cases reviewed by the author thirty showed contraction.

As regards changes in the more normal lung the cases may be divided into five groups: (1) those with neither physical nor roentgenological changes in the more healthy lung (eleven cases in the series reviewed); (2) those showing roentgenological changes at the hilus but no definite tuberculous foci in the parenchyma (four cases in the series reviewed); (3) those with roentgenological changes but no physical symptoms (three cases in the series reviewed); (4) those with physical but no roentgenological changes (none in the series reviewed); and (5) those with roentgenological as well as physical changes (twenty-two cases in the series reviewed).

The deaths in the cases reviewed occurred in the acute cases with a duration of from nine months to one year and ten months.

The author believes that in general patients more than forty-five years of age should not be operated upon.

In the cases reviewed the sputum varied considerably in amount and contained bacilli in all but two.

As far as possible the operation was performed in an afebrile period.

When the patient did not gain weight in spite of nutritious food the results were poor.

A recurrence of tuberculosis in the lung on the side operated upon developed in two cases.

Apical cavities did not collapse in spite of repeated posterior and anterior thoracoplasties. This was explained by changes in the chest wall and especially in the costal cartilages in the form of more or less marked calcification, the size of the cavities and the character of their walls, the relation of the cavity to the ribs (it is much more difficult to collapse a cavity which is adherent to the chest wall than a cavity that is surrounded by elastic lung tissue), the inaccessible position of the apex, the difficulty of removing the first rib, and interference by the diaphragm.

The author concludes that thoracoplasty is of most value in cases of unilateral chronic tuber-

culosis in which the general condition is good and there is a tendency toward contraction. The better lung must be healthy or any tuberculous process within it must be at a complete standstill as proved by a long period of observation. The operation must be done during an afebrile period. In cases with large apical cavities thoracoplasty, even including phrenic exeresis, has not given favorable results.

LOUIS NEUNZER M.D.

Archibald E. The Classification of Operative Risks in Respect of the Operation of Thoracoplasty for Pulmonary Tuberculosis and the Results of That Operation. *Canadian M. A. J.* 1929 xxi 302

With respect to the risk of treatment by thoracoplasty Archibald classifies cases of pulmonary tuberculosis into three groups, as follows:

1. **Favorable cases.** These are cases of chronic fibroid tuberculosis which is predominantly unilateral usually with cavities no larger than a pigeon's egg and without any sign of activity in the other lung. The patients are adults in good general condition with a normal temperature and pulse rate but with positive sputum. The X-ray shows disseminated lesions in one lung or confined to the upper third of one lung. On account of the fibrosis the lung is contracted, the trachea, mediastinum and heart are pulled to the affected side and the diaphragm may be raised. The other lung is rarely clear but the lesions within it are minimal and fibrotic. Sanatorium care has reached the limit of its usefulness but the patient is prevented from returning to active life by the positive sputum and the almost positive assurance that active life would cause a relapse.

2. **Doubtful cases.** In the cases in this group there is more extensive infiltration of the more diseased lung and the cavities are multiple or large. The other lung is under suspicion, and the general condition is not good. There are occasional periods of slight rise in the temperature and pulse rate and the patient has lost a little weight and strength. The sputum is markedly positive. The X-ray shows larger cavities, more infection and more destruction in the less involved lung but nevertheless there are evidences of reasonably good resistance in the form of scar contraction in the more diseased lung. The prognosis without operation is poor.

3. **Unfavorable cases.** In this group the lesion is definitely progressive. Cavitation is extensive often involving both lobes. In the less involved lung signs of more recent tuberculous infiltrations may be seen. The patient is usually febrile, and the general condition is poor. The prognosis is extremely unfavorable.

The author reports the results in ninety cases operated upon more than a year ago.

Of twenty-four patients who were regarded as favorable 13 (56 per cent) are practically cured, 16 per cent show marked improvement, and 4 per

cent show moderate improvement. Three died but only one death was due to the operation.

Of forty five patients who were regarded as doubtful risks 38 per cent are practically cured and about 14 per cent show marked improvement. Nine died. Three (6.6 per cent) died as the result of the operation.

Of twenty one patients who were regarded as unfavorable risks not one has been cured and only three show marked improvement. Of fourteen who died eight (38 per cent) died as the result of the operation. Archibald explains the performance of the operation in this unfavorable group by the fact that it offered the only possible chance for relief. He says: "While for humanitarian reasons it will continue to be difficult to refuse operation to these 'poor risk' patients recent experience encourages the hope that the high operation mortality can be materially reduced by doing the operation in three or four stages rather than in the usual two stages."

Cases of pulmonary tuberculosis complicated by empyema are divided by Archibald into three groups: (1) those in which the pleural effusion is seropurulent; (2) those in which it is a thick greenish fluid; and (3) those with a mixed infection. In the first group simple thoracoplasty if indicated may overcome the effusion. In the second because of the thickness of the pleura thoracoplasty must be much more extensive than usual. In the third some sort of open drainage must be done.

RALPH B. BETTMAN, M.D.

Schuster, N. H. The Etiology and Pathology of Primary Lung Tumors. *J. Path. & Bacteriol.*, 1927, XXIII, 199.

The author studied sixty two cases of lung tumor to determine the importance of occupation infection and irritation in the etiology. No relation of the neoplasm to occupation could be established. The infections mentioned in the recent and remote histories included tuberculosis, syphilis, influenza, pleurisy, and chronic cough with bronchitis. The irritations recorded were associated with the inhalation of dust, coal, silica, steel, and irritating gases.

Forty six of the patients were males. The tumor occurred in the right lung in thirty one cases and in the left lung in twenty three. In five cases there was bilateral involvement.

Five of the tumors were probably of thymic origin. Two of these were lymphosarcomata, one was a small round celled sarcoma, one a large round celled sarcoma, and one a tumor of undetermined type. There were three pulmonary sarcomata—a large round celled tumor in a child five years old, a spindle celled tumor in a girl twenty-one years old, and a small round celled tumor in a man forty two years old. In fifty four cases the neoplasm was a carcinoma of epithelial origin. All of these cases had the following features in common: (1) bronchial obstruction by a bulging growth in the wall or interruption of a bronchus directly by the carcinoma-

matous mass, (2) a massive tumor in the mediastinum, (3) secondary deposits in tissues other than the mediastinal glands, among which were commonly the cervical glands, the liver, the suprarenal glands, the brain and the bones, and (4) giant cells or multinucleated cell masses like syncytium. General carcinomatosis did not develop.

J. D. WILLEMS, M.D.

Welfer, C. V. Entdifferentiation in Primary Carcinoma of the Bronchi and Lungs. *J. Cancer Research*, 1929, XIII, 218.

This article is a histological analysis of fourteen cases of primary carcinoma of the lungs and bronchi. The clinical descriptions of twelve of which have been published previously. The view is held that all types of carcinoma of the lung can take origin from bronchial structures, and that the various forms of these tumors are related to one another as a progressive series with an ascending line of differentiation of parent cells and a descending line of varying degree of entdifferentiation.

An ingenious scheme has been devised to simplify the classification of the types described. On a diagram represented by the letter Y, the most highly differentiated columnar celled papillary mucin forming adenocarcinomata are placed at the upper extremity of the left hand limb. There are two of this type. Lower down on the limb is placed an adenocarcinoma with smaller spherical or polyhedral cells and gland like spaces but no papillary structure. Next is one with a tendency to become scirrhous and with absence of mucin. The fifth is a medullary adenocarcinoma with polyhedral lining cells in one or two layers and a coarse stroma. In the sixth the predominant type is a medullary neoplasm resembling a non cornifying squamous celled carcinoma. The seventh which ends this series at the lower end of the left hand inclined limb of the diagram is a scirrhous type of neoplasm with slender columns and cords of cells running through a dense hyaline stroma.

On the right hand limb of the Y are placed four tumors which are frankly of the squamous celled type. Beginning above with the most differentiated there is a typical cornifying medullary squamous celled carcinoma with abundant keratohyaline formation and epithelial pearls. The next two in this descending scale are practically the same as the preceding one but show less cornification. The last one on this limb of the diagram comes near the last one on the left limb and has a corresponding resemblance to it. It consists of a non cornifying squamous celled carcinoma in the form of large nests of cells. These cells are small and their cytoplasm is scant.

On the stem of the Y are placed the three remaining tumors. These are too insufficiently differentiated to show whether the parent cells are gland celled or squamous celled in type. They are made up of small round cells with little cytoplasm and contain no trace of cornification on the one hand nor of

glandular architecture on the other. There is marked resemblance in them to small round celled sarcomata.

Thus this series of carcinomata of the lung begins with an undifferentiated type which becomes progressively more differentiated and finally diverges into two different types, ending in the typical squamous celled and the columnar celled tumors. In this series the undifferentiated cell carcinomata give rise to widely disseminated metastases while the more fully differentiated columnar celled types fall behind in this respect. The squamous celled types spread chiefly by extension.

There are eighteen photomicrographs to elucidate the classification.
J. D. WILKES, M.D.

HEART AND PERICARDIUM

Graham E. A. Decompression of the Heart. *Ann Surg* 1919, 20: 817.

Following a review of the literature, Graham reports two cases of decompression of the heart.

When the heart is greatly enlarged two kinds of serious compressive effects may result. Those of one type are exerted on the heart itself and those of the other type on other intrathoracic structures. Graham discusses the heart which is so large that it is embarrassed by confinement within the chest wall.

The first case reported was that of a boy fourteen years of age who, since his fifth year, following acute articular rheumatism, had been obliged to spend most of his life on a convalescent farm and in a hospital because of frequent attacks of cardiac decompensation. On November 5, 1928, under novocain anesthesia, the author removed the fourth and fifth ribs and costal cartilages including the periosteum and perichondrium from the left border of the sternum to the anterior axillary line. After this operation, despite the decompensation, the patient

stated that his symptoms were much more easily endured than before.

The second case was that of a five year old girl with cardiac decompensation following several attacks of rheumatic fever. Examination revealed mitral stenosis, aortic insufficiency and myocarditis with a marked precordial bulge and very evident heaving of the whole precordium. On January 1, 1929, under nitrous oxide anesthesia, the author removed the fourth, fifth, and sixth ribs and costal cartilages from the sternum to the anterior axillary line. The operation was followed by marked subjective improvement and a decrease in the venous pressure and the nodal rhythm.

Neither of these cases presented the ordinary indications for the Brauer cardiolysis, such as positive evidence of tethering of the heart by adhesions. Accordingly, the beneficial results seem to have been due entirely to the decompression.

The author emphasizes that caution is necessary in evaluating the results of the operation and admits that because of the brief time that has elapsed since the intervention, it may be unwise to draw any conclusions whatever except that certain striking immediate effects were produced. The operation itself seems to be associated with practically no danger, but there are probably only a few cases in which it is justified. Apparently these would be cases of children with definite precordial bulging and a large heart. Perhaps when more is learned regarding the effects of pressure on the heart, other cases in which the indications mentioned are not present may be regarded as suitable for decompression. On the other hand, the operation may be found to be of no special value.

A note at the end of the article states that both patients died April 23, 1929, the day after this paper was read before the Philadelphia Academy of Surgery.
CARL R. STECHER, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Abt I A The Diagnosis of Peritonitis In Infancy and Childhood *J Michigan State M Soc*, 1929
xxviii 674

The causes of peritonitis and the modes of response of the organism to the infection differ in children and adults

Acute diffuse peritonitis is probably the most painful of all diseases. When the peritoneum is diffusely inflamed all movement is painful and there are other symptoms of peritoneal irritation such as tenderness and rigidity of the abdominal muscles, vomiting, constipation in older children and diarrhoea in young infants. Perforation of an abdominal viscus is followed by immediate very severe pain. The pain is increased by cough, hic cough vomiting and breathing. The abdominal wall becomes as rigid as a board and the breathing thoracic instead of abdominal.

The temperature rises but in young infants the fluctuation may be slight.

The reaction of the circulatory apparatus and the pulse is of the utmost importance. The pulse is rapid, small, soft, and quite irregular. Its rapidity is out of proportion to the height of the temperature.

In acute peritonitis, vomiting is one of the early symptoms. Persistent emesis indicates that the peritoneal process is extending.

Bingulitus is due to a variety of causes. In association with other symptoms it is characteristic of peritoneal inflammation and when it persists it indicates diffuse involvement of the peritoneum.

The most important varieties of peritonitis occurring in the young are fetal peritonitis and the peritonitis of infancy, peritonitis with appendicitis and pneumococcal gonococcal streptococcal in fluenzal migratory and tuberculous peritonitis.

Fetal peritonitis may be due to a prenatal infection which is transmitted by the blood stream of the mother. There are also on record a few instances of fetal peritonitis of syphilitic origin.

Ballantyne reports cases of plastic peritonitis in newborn infants. A possibly important factor in the causation of fetal peritonitis is a malformation or developmental anomaly of the abdominal viscera. Congenital malformation, stricture or stenosis of the intestine may lead to peritonitis through perforation.

In children as in adults, appendicitis is probably the most frequent cause of peritoneal inflammation. In the early stages of this condition there is a tendency of the peritoneum to wall off the infective process by the formation of plastic adhesions between the caecum, ileum, omentum and anterior parietes, but in the child a rapid spread of the in-

fection and early involvement of a wide area are favored by the large amount of lymphoid tissue in the appendix, the thinness of the wall of the appendix, and the incomplete development of the omentum, especially in the early months of life.

Appendicitis is more insidious in childhood than in adult life. Acute digestive disturbance with fever is so common in infancy and may occur with such severe toxic symptoms that alimentary intoxication is more often suggested.

Pneumococcal peritonitis may be classed among the most frequently fatal diseases of childhood. It occurs more often in female children than in male children. Otitis media may be a primary focus. It has been assumed that in the female the invasion occurs through the genital tract, reaching the peritoneal cavity by the way of the fallopian tube.

The disease presents itself in the form of a localized circumscribed abscess or an acute diffuse peritonitis.

Regarding its usual course, the author states that without any marked prodromes the child falls ill with a high fever, abdominal pain, vomiting and sometimes diarrhoea. The pulse is rapid and difficult to count. When examined early, the abdomen is usually not found to be distended although it is not easily compressed. The muscular rigidity, which is a common sign in other intra-abdominal processes, is not present.

The diffuse type of pneumococcal peritonitis is not uncommon. It tends to run a severe and in most instances a rapidly fatal course. It begins acutely with violent abdominal pain, high fever, severe diarrhoea and vomiting. The temperature may reach 103 degrees F, but in some cases may fall below normal.

Gonorrhoeal peritonitis is seldom encountered in children.

Tuberculous peritonitis is the most common inflammatory disease of the peritoneum in childhood. The acute form of the disease is of two varieties, the diffuse or milary and the localized.

The milary type is an acute infectious process of the peritoneum associated with general milary tuberculosis. The acute localized form has its site of origin in the appendix and the ileocaecal group of mesenteric glands. The chronic form of tuberculous peritonitis presents itself in the ascitic, fibrinous (plastic) or caseous (ulcerous) form.

Septic peritonitis may occur during the course of otitis with thrombophlebitis, acute tonsillitis, scarlet fever and influenza.

In the differential diagnosis of peritonitis, acute pyelitis, pneumonia, diaphragmatic pleurisy, strangulated hernia, injuries to the testes and orchitis must be ruled out.

Laboratory aids in the diagnosis are trocar puncture and tests for indican in the urine

In infectious peritonitis the leucocyte count is usually high and shows an increase in the polymorphonuclear cells

W N ROWLEY MD

GASTRO INTESTINAL TRACT

Boldyreff W N, and Kellogg J H *A Study of the Mechanism of Gastric Contractions* *Bull Battle Creek Sanit & Hosp Clin Battle Creek Michigan 1929 XLIV 289*

The motor work of the stomach goes on during both digestion and fasting. The motor activity occurring during the period of alkaline reaction in the stomach differs from the phenomena which occur during the secretion of acid gastric juice. The secretory processes usually begin a little earlier than the motor processes. The intestinal contractions begin before the gastric contractions.

In a series of thirty experiments it was found that fresh active pancreatic juice is the only true excitant of the contractions of the empty intestine and stomach. The ferments of the pancreatic juice are the chief stimulants of the intestine but if the amount present is too great irritation antiperistalsis and vomiting will occur. Bile, intestinal juice, gastric juice and saliva introduced into the duodenum are not capable of producing contractions of the intestine and stomach. Moderate spontaneous gastric secretion does not cause gastric contractions but on the contrary inhibits them. Small amounts of acid introduced into the stomach produce the same reaction.

The appetite stops the periodical gastric contraction for a short time. When the stomach is filled gastric contractions are inhibited by pain, psychic disturbances, warming of the body, and pharmacological substances such as atropin. When digestion is not in progress the acid gastric juice normally inhibits contractions but in the presence of irritation of the intestinal mucous membrane there is an increase in the contractions which may be accompanied by vomiting. EARL GARDNER MD

Brown A *Congenital Hypertrophic Pyloric Stenosis and Its Operative Treatment* *Ann Surg 1929 XC 507*

Brown briefly reviews the literature on pyloric stenosis and reports a series of twenty cases in which he operated. The ages of the babies in his cases ranged from twenty eight days to six and one half months. Fifteen of the infants were males. The diagnosis was made from the history of gastric vomiting without bile which began as regurgitation and developed eventually to projectile vomiting, the appearance of a peristaltic wave passing from left to right across the upper abdomen, beginning weight loss, scanty urine, stools without curds, and in a few cases the presence of a palpable tumor below the liver to the right of the midline. The author believes that in cases with this history and

these physical findings operation is indicated without further delay. Fluoroscopy was not employed in any case by Brown but one child had been examined fluoroscopically before it was seen by him.

In the author's opinion the earlier the operation the better the chance for recovery and the less the danger of shock and dehydration. Feeding methods of treatment are not particularly successful. If the child is seen early and a definite diagnosis is made Brown operates at once unless weight loss and dehydration are marked. In cases with severe dehydration the infant receives gastric lavage, proctoclysis with salt solution and glucose, and an intra-peritoneal injection of saline solution and operation is performed after from twelve to eighteen hours.

Brown performs the Rammstedt operation under ether narcosis with the baby held down on a previously warmed narrow board by means of circular gauze bandages about the arms and thighs. The tumor is delivered through a right rectus incision and the muscle fibers are split in a longitudinal direction through the most avascular portion of the pylorus down to the mucosa. The tumor is dissected laterally with the handle of the scalpel until the mucosa pouts out into the incision itself. The pylorus is then dropped back into the abdomen and the abdominal wall is closed by suture after the introduction of saline solution through a rubber catheter into the peritoneal cavity.

In the cases reviewed there were no deaths and in no instance was the incision accidentally opened. JOHN W. NEWBY MD

Gutzeit K *Gastrosopy in the Clinical Diagnosis of Gastric Conditions* *(Die Gastroskopie im Rahmen der klinischen Magendiagnostik)* *Erst Bd 1. Aufl. 1929 XXIV 2*

This work is based on the author's extensive experience. It attempts to evaluate gastrosopy as compared with other methods used in the clinical diagnosis of gastric conditions. In the first chapter the author gives a historical review of the development of the procedure. He states that the Schindler and Korbsch instruments supplement each other. The Schindler instrument is easier to manipulate and gives clearer pictures but the Korbsch instrument is less disagreeable to the patient and can be introduced when the lower end of the esophagus is abnormally bent toward the left.

In 500 gastrosopies the author had no accident. He attributes this fact to the great care taken in the determination of the indications and the manner in which the examination was carried out. He emphasizes that not a few persons are unsuited to gastrosopy. The percentage of patients subjected by him to gastroscopic examination was smaller than the percentage examined gastroscopically by others (85 per cent as compared with 95 or 90 per cent examined by Schindler, Huebner and Hohlweg). In only about two-thirds of these cases was a good view of the stomach obtained. In one third the parts of the stomach and the pylorus were inspec-

Gutzeit discusses in detail the general preparation for the examination the anesthesia, the position of the patient the technique of introducing the gastroscope and the difficulties experienced. The accidents reported in the literature he attributes to failure to consider contra indications to the procedure or carelessness in the introduction of the gastroscope. While not all accidents have been reported, Huebner's collection (9 accidents in 3 637 gastroscopies) shows that the procedure is not very dangerous.

In discussing the indications, the author warns against demonstration gastroscopies. The information to be obtained relates to the surface color, the contour of the inner surface defects in the mucosa motility phenomena, and mucus coating. The chief field for gastroscopy is the diagnosis of gastritis. Gutzeit believes that exact diagnosis will be possible only when pieces of tissue can be removed through the gastroscope for histological examination. Therefore the findings made up to the present time are to be evaluated with reserve. Gross changes in the mucosa such as ridges segmentation marked color changes granulations and ulcerations are recognizable without anatomical control but it is often impossible to determine whether they are recent or old.

In the diagnosis of ulcer, a negative finding is not decisive as not all parts of the stomach can be seen, but gastroscopy is of value in revealing the inflammatory changes in the mucosa around an ulcer. The author does not say whether the gastritis associated with ulcer is primary or secondary. He emphasizes that gastroscopy is of great value to determine the effect or lack of effect of non operative treatment but it does not show how many layers of the stomach wall are involved in a defect. In the diagnosis of ulcer gastroscopy should be used only in conjunction with other clinical and roentgenological methods of examination.

With regard to the diagnosis of carcinoma the author is much more skeptical than Schindler. He states that the differential diagnosis between carcinoma and chronic gastritis is often very difficult and the occurrence of malignant degeneration of a chronic ulcer cannot be determined with the gastroscope. In the solution of these problems the excision of tissue which may be possible in the future will be of great aid. According to the author's experience gastroscopy has been of less aid in the diagnosis of cancer than the roentgen and general clinical examinations. It should be used only as a control for roentgen examination.

Gastroscopy is of particular importance for the diagnosis of postoperative changes in the gastric mucosa which are often not shown by the roentgen ray. It may reveal marked gastritis spasm in the newly formed gastric outlet swellings ulcers at the site of anastomosis and ulcers that were overlooked. It is of still greater value before operation. It will indicate the most favorable time for intervention which is after subsidence of the acute inflammatory changes in the mucosa.

Of particular importance is the author's comparison of gastroscopy with roentgen examination. The former is of value chiefly for the diagnosis of mucosal morphology and the latter for the diagnosis of gastric function but as a diagnosis of mucosal changes can be made also with the X ray it is evident that the roentgen procedure is the more important method. It cannot be replaced by gastroscopy. When the roentgen findings are positive gastroscopy may be dispensed with. Very often, however, a positive roentgen diagnosis does not explain certain associated clinical symptoms. When this is the case gastroscopy is advisable.

Gastroscopy and exploratory laparotomy are also compared. The danger of the latter is as great as that of the former but a fourteen day period of convalescence after an exploratory laparotomy is to be compared with the half hour required for gastroscopic examination followed at the most, by a sore throat for only a day. When all of the important parts of the stomach can be seen clearly with the gastroscope and no carcinoma or ulcer is found, the patient may be spared an exploratory laparotomy provided a carcinoma in some other place is not suspected. When the view of the stomach is unsatisfactory, exploratory laparotomy is justified.

In another chapter the author reports his experiences and observations by means of case histories. These are illustrated by numerous excellent roentgenograms but no gastroscopic pictures.

With regard to the role of the muscle layer in the formation of folds the author states that he was unable to see in the gastroscopic picture any regular movement of the mucosal folds such as that observed by Forssell.

The diagnosis of gastritis is discussed in great detail. In this field, histological studies of the gastroscopic findings are still completely lacking. The author discusses Schindler's classification of gastritis (mucosal catarrh hypertrophic gastritis, and atrophic gastritis) from the point of view of the anatomical studies of Stoerck and Konjetzny. He limits himself to a detailed account of the gastroscopic findings.

In Gutzeit's opinion the so called superficial catarrh is noteworthy because the uncomplicated catarrhal superficial change is found most frequently in the oral part of the stomach (forix and corpus). The superficial mucosal gastritis generally runs a benign course under treatment, but has a marked tendency to recur. This changing focal inflammation of the mucosa gives the impression that the mucosa of the antrum and pylorus has a tendency toward a connective tissue reaction and the mucosa of the corpus a tendency toward exudative and atrophic changes.

Hypertrophic gastritis is described in detail with 2 roentgenograms, 1 gastroscopic picture, 2 photographs of gross specimens and 1 photomicrograph. The most marked proliferative changes in the mucosa were seen by the author in cases with stagnation of the gastric contents with acid fermentation cases.

of stenosis at the pylorus in the duodenum, or above an hourglass constriction

In addition, the author describes a case of atrophic gastritis (demonstrated clinically by anacidity) and several cases of gastritis associated with lead poisoning, in which all types of chronic inflammation changes of the gastric mucosa (hypertrophy, atrophy erosions ulcers and small epithelial lesions) were found. He has seen true ulcers even in the absence of gastric changes.

Gutzert discusses also gastritis associated with disease of the biliary tract, which is occasionally disregarded and is the cause of poor results of operation on the biliary tract. In this condition gastroscopy is of special diagnostic aid.

A large chapter deals with operations on the stomach. The author has studied 40 cases in which operation was followed by poor results. The cause of the poor results was disease of the gastric mucosa which was present in every case and usually more severe than any other spontaneously developing gastric disease. This material strengthens the theory that in the surgical treatment of ulcer resection methods are best. Gastroscopic examination revealed principally hypertrophic processes and marked swelling of the entire mucosa. The oedematous catarrh is the typical form of gastritis found in persons who have been subjected to gastro-enterostomy. The failure of the gastro-enterostomy is to be attributed to a primarily existing chronic gastritis or a narrow swollen gastro-enterostomy stoma which led to gastritis by causing gastric ileus.

Of the defects of the gastric mucosa the author describes superficial epithelial lesions, erosions which he ascribed to an anemic or hemorrhagic infarct, and the typical round ulcer. With regard to the question as to whether the ulcer is a result of the gastritis, he agrees with Schindler who unlike Korbach and Hohlweg sees no causal relationship. He states that ulcer and gastritis are different manifestations of a disturbance which he calls a 'pre-disposition'. In this process, peptic ferments play the chief rôle. The chronic ulcer, which is always associated with signs of inflammation frequently cannot be seen on gastroscopic examination. The author has repeatedly observed healing processes in chronic ulcer by endoscopic examination. The persisting gastritis in irreparable gastric changes is the cause of recurrence.

With regard to the problem as to what factors cause niche formation the author is of the opinion that the circular spasm described by Haudek the mucosal formations observed by Forsell and the vomiting without responsible for deepening of the and developed even responsible for deepening of the

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For the diagnosis of benign gastric tumors gastroscopy is to be preferred to all other methods.

In conclusion the author discusses the value of the different clinical methods of examination as compared with roentgen and gastroscopic examination.

WAXER (Z)

McCann J. C. Experimental Peptic Ulcer. *Arch Surg* 1929 xix 600

In this study the technique of surgical duodenal drainage was so modified that the alkaline secretions of the duodenum were shut off from the distal side of the pylorus into the fundic portion of the stomach. Despite the volume of alkalies drained into the stomach ulcers still formed in the anastomosed jejunum in approximately 80 per cent of the experiments.

Evidence was obtained which substantiated Mann's interpretation of the important mechanical factors that are active in causing these experimental ulcers and which probably influence the localization of clinical ulcers. On the duodenal side of the pylorus these mechanical factors are the force of the impinging stream ejected through the pylorus and the destructive friction of coarse cellulose foods on the reparative granulations and epithelial cells of a healing ulcer. On the gastric side of the pylorus there is the same friction of coarse cellulose food augmented in the prepyloric segment by the absence of protective rugæ particularly on the lesser curvature and by the vigorous tonic and peristaltic contractions of this segment which appear in response to an adequate meal.

In a long series of experimental studies Mann and his co-workers produced typical peptic ulcers by injuring the neutralizing mechanism in the duodenum so that the acid chyme from the stomach could act on the mucosa without hindrance. In earlier studies McCann found that the mechanical factors active in producing such ulcers and presumably influencing clinical ulcers are the force of the stream ejected through the pylorus, the friction of coarse cellulose food and the vigorous motor activity of the prepyloric segment.

Employing a method of fractional gastric analysis which he devised for use on the dog, McCann has found the chemical factor underlying the production of these ulcers to be normal acid peptic activity. The ulcers produced exhibit the highly destructive character of the gastric chyme. Of great significance is the gradient of immunity of the mucosa of the intestinal tract to ulceration which probably is the deciding factor determining the greater frequency of duodenal ulcer as compared with gastric ulcer and the tendency of jejunal ulcer to develop following gastro-enterostomy.

As spontaneous experimental ulcers of the chronic type produced in these experiments never developed in the stomach these studies demonstrate that the gastric mucosa possesses considerable immunity to the autolytic activity of the acid and pepsin secreted

by the stomach, whether exposed to it for a normal period or for a prolonged period. The normal duodenal mucosa is also completely immune to this activity under the conditions of a normal relationship between the acid chyme ejected through the pylorus and the neutralizing secretions present in the duodenum.

With slight disturbances of the interrelationship of normal functions in the pyloric region, the ordinary factors active in this segment assume pathological significance. Experimental disturbance of these relationships has developed a considerable amount of evidence that stands in answer to Cohnheim's statement that the real difficulty is in determining the unknown something which prevents the healing of ulcer. The evidence indicates that the unknown something may be the normal acid peptic activity of the gastric chyme with the mechanics of the region which act as a definite handicap once a lesion has been established.

The literature contains little on autolysis of the stomach. Two such instances observed in an experimental study are reported. There may be a general analogy between the intracellular enzymatic activity responsible for general autolysis and the extracellular enzymatic activity responsible for these instances of autolysis of the gastric mucosa. This process may represent the mechanism by which isolated ulcers of the mucosa are established when there is a local reduction in the immunity of the mucosa to autolytic activity. It is probable that the mucous secretion of the stomach, by virtue of its capacity to combine with free acid, forms the principal defense of the gastric mucosa against autolysis.

Cole L G Gastric Ulcer The Results of Operation for Corpic Ulcer *Am J Surg* 1929 vii, 536

Cole classifies gastric ulcers into three groups viz those in the vertical part of the stomach, i.e., so called body or corpic ulcers, those in the pyloric region or antrum or the pyloric region just proximal to the pyloric valve the pyloric group and those most frequently located in the cap or the so called first portion of the duodenum.

He reviews twenty six cases eleven of which were treated by gastric resection ten by excision of the ulcer and five by gastro enterostomy without excision.

Of the eleven patients treated by gastric resection six lived to leave the hospital and five died while in the hospital.

Of the ten patients treated by excision two had a mucosal ulcer and one an already healed ulcer. Of the remaining seven two died three were benefited and the condition of two became worse.

Of the five patients treated by gastro enterostomy all lived but the author questions whether the ulcer healed because of the gastro enterostomy or in spite of it.

Cole concludes that mucosal ulcers are superficial and transitory and are not to be considered surgical.

He believes that an ulcer becomes surgical if it distorts the stomach, but in the twenty six cases reviewed there was none of this type. Ulcers occurring nearer the greater curvature than the lesser curvature should be regarded as being located in cancer areas. Any ulcer which increases in size after the initial avulsion of the crater should be regarded as malignant or at least not as a benign type of lesion.

Gastric resection for ulcers of the corpus has such an extremely high mortality that it is not justified.

Gastro enterostomy for corpic ulcers is merely an excuse to do something.

In conclusion the author states that surgery should be resorted to in cases of corpic ulcer only when the lesion is found by X ray examination to increase in size during a three weeks period of rest in bed.

JOHN W NUTCH M D

White F W Observations on the Healing of Gastric Ulcer *N England J Med*, 1929, cci, 1075

In the diagnosis of gastric ulcer in the observation of the healing of the ulcer and in the demonstration of the immediate results of medical treatment, the roentgen ray is of great value.

Accurate diagnosis is the most important single factor in the treatment. Prolonged medical treatment is contra indicated in cases with serious complications, perforation recurrent hemorrhage, and marked pyloric obstruction which does not yield and in the cases of patients who, because of financial or social reasons or lack of intelligence are unable to carry it out.

A study of fifty of the author's cases over a period of years showed that gastric ulcer usually heals in the intervals between symptoms and that healing may occur within a month or six weeks. The length of time required for healing varies from one week to six months.

In the cases reviewed the time of healing was not much affected by the age of the patient the size of the ulcer, or the duration of the symptoms. White tries medical treatment first just as in cases of duodenal ulcer. Surgery is not the primary treatment. He watches the immediate results of treatment with the greatest care by frequent examinations. Ulcers of the lesser curvature are much easier to watch with the X ray than others and yield remarkably well to medical treatment. In a persistent follow up for from three to nine years of fifty cases of gastric ulcer treated medically, including some in which late operations were done only on instance of the probable development of cancer on an ulcer basis was discovered. The incidence of malignancy in this series was therefore 2 per cent. This low figure may be due to the fact that when the size of the ulcer could be estimated the majority of the lesions were found to be of small or medium size. According to the author's experience medical treatment of gastric ulcer is safe if the cases are very carefully chosen and followed up.

MORRIS H KAHN, M D

of stenosis at the pylorus in the duodenum, or above an hourglass constriction

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With regard to the problem as to what factors cause niche formation the author is of the opinion that the circular spasm described by Haudek, the mucosal formations observed by Forsell and the swelling of the region surrounding the ulcer described by Berg are responsible for deepening of the niche.

In the diagnosis of carcinoma gastroscopy is of aid only when roentgen differentiation between carcinoma and perigastritis is impossible. It is of particular value for the recognition of a carcinoma situated in the region of the cardia. In the diagnosis of carcinoma the roentgen procedure and gastroscopy

supplement each other. An ideal early diagnosis of carcinoma cannot be made with the gastroscope.

For the diagnosis of benign gastric tumors gastroscopy is to be preferred to all other methods.

In conclusion the author discusses the value of the different clinical methods of examination as compared with roentgen and gastroscopic examination. WANKER (Z)

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As spontaneous experimental ulcers of the chronic type produced in these experiments never developed in the stomach, these studies demonstrate that the gastric mucosa possesses considerable immunity to the autolytic activity of the acid and pepsin secreted

In 1910 Payr of Leipzig recommended the "sleeve resection of the stomach."

The surgeon's problem is twofold—diagnosis and treatment. Diagnosis may be established only after careful and perhaps prolonged study of the case. The services of an internist may prove most valuable. At times a positive diagnosis may be impossible without an exploratory incision and in rare cases not even then. After the diagnosis has been made it becomes a matter for mature surgical judgment to decide which surgical procedure is most likely to give the best results in the particular case. The author states that he has long since abandoned the pernicious habit of deciding beforehand what he will do in operating on a given case as each case is a law unto itself. It is poor judgment and worse surgery to push the use of any operative method beyond its anatomical and physiological limitations. By so doing the surgeon courts disaster.

When these fundamental principles of surgery abundantly established as they have been both tonically and by the combined experience of leading surgeons everywhere come to be thoroughly understood and more generally observed much of the present dissatisfaction with the end result of surgery of the stomach upon the part of both the patient and surgeon will disappear.

CARL R. STEINKE, M.D.

Buerger M. and Konjetzny G. E. The Utilization of Nourishment After Total Extirpation of the Stomach (Ueber die Nahrungsausnutzung nach Totalextirpation des Magens). *Zentralbl. f. Chir.* 1909 p. 1754.

In the case of a patient subjected to total gastrectomy the authors attempted to determine which diets are tolerated best after complete removal of the stomach. The intake and output were accurately measured and the caloric loss determined during periods of carbohydrate, fat, protein and mixed feeding.

The results showed that the caloric loss in all types of feeding is relatively small (between 7.49 and 12.2 per cent). While the loss in proteins and carbohydrates remained within physiological limits the fat metabolism showed a marked disturbance. The authors attribute this disturbance to the lack of the hydrochloric acid reflex with consequent insufficiency of pancreatic and biliary secretions. They therefore conclude that persons subjected to total gastrectomy should be fed small portions of mixed foods and when a severe disturbance of fat absorption occurs the administration of fresh pancreas is desirable.

BANGE (Z.)

Mueller E. F. Paralytic Ileus (Ueber den paralytischen Ileus). *Mitt. a. d. Grenzgeb. d. Med. u. Chir.* 1929 xli 417.

The author attempts to analyze the origin of the individual symptoms in the paralytic ileus of peritonitis. In the course of a local infection in the abdominal organs there develops as the result of

an autonomous vegetative reaction a dilatation of the vessels in the splanchnic area with a corresponding reactive withdrawal of blood from the periphery. As a result of this disturbance in the distribution of the blood there is a change also in function in the splanchnic region and the periphery. Synchronous with the distention of the vessels there is reflex stimulation of secreting cells in the stomach and intestines. This is followed by the increased production of concentrated gastric juice, mucus, and bile with distention of the gastro-intestinal tract which explains a series of typical ileus manifestations such as discomfort, nausea and vomiting.

Of practical importance is the author's conclusion in agreement with the view of Levy, that the paralysis of the bowel in the early stages of peritonitis is not to be regarded as a muscular paralysis. It is the result of the increased vegetative stimulation which leads to an increase in the volume and elongation of the smooth musculature. In contrast to striated muscle which reacts to stimulation with the characteristic rhythmic contraction this capacity for contraction is absent in smooth muscle. Peristaltic movements which arise simply from shrinkage of the intestinal musculature cannot occur as long as the condition of increased volume persists. Consequently, the clinical picture of intestinal paralysis results from the excitation state in the splanchnic area caused by the peritoneal infection. Under physiological conditions the transmission of vegetative stimulation leads to segmental relaxation of the affected portion of bowel. Contraction occurs only when the irritating impulse ceases as the reaction of the previously stimulated intestinal musculature. If the irritation continues as is the case in peritoneal infection intestinal contractions do not occur and the bowel remains in a relaxed and dilated state. Therefore in peritonitic paralysis of the bowel the autonomy of the intestine is disturbed by excessive impulses transmitted by way of the vegetative trunks.

Experimental evidence confirms this view. The author infected dogs by the intravenous injection of a bacterial emulsion and then determined the quantity of lymph flowing through the thoracic duct. During the stage of intestinal inactivity which was regularly observed after the experimental infection, the flow of secretion through the thoracic duct increased and when peristalsis returned it again diminished. The increased stimulation in the nerve trunks of the gastro-intestinal canal leads to insufficient closure of the cardia and pylorus. This explains the backing up of duodenal fluid into the stomach and oesophagus at the beginning of paralytic ileus. The occurrence of antiperistaltic movements is denied by the author.

Similar occurrences must be assumed to explain the almost regular appearance of abdominal symptoms in general infections. In these conditions also there is a reactive hyperemia with increased function in the splanchnic region as is indicated by the hyperemia and increased activity of the liver and

Jordan S M Gastric Ulcer and Cancer *J Am Med Ass*, 1929 xciii, 1642

The frequency of gastric carcinoma its insidious onset and the generally unsatisfactory results of surgery unless the lesion is in its very early stages are probably responsible for the still prevalent assumption that all gastric lesions should be treated surgically because of the danger of malignancy. Lesions of the stomach may be divided into three groups (1) frankly malignant lesions (2) frank ulcers and (3) questionable ulcers and carcinomata.

Gastric ulcers need not all be regarded as malignant or even potentially malignant. Cases of frank ulcer in which roentgen examination shows complete disappearance of the lesion and the clinical symptoms are completely relieved may be regarded as healed. However a certain percentage of frank ulcers are of the callous and penetrating type. While these may heal partially with complete relief of symptoms they are still discernible in a careful roentgen examination and should be resected as they are a source of chronic irritation in an organ susceptible to malignant degeneration and because there will later be a recurrence of the symptoms with recrudescence of the ulcer crater.

Cases in which malignancy is suggested should be treated by radical surgery if after two or three weeks of medical treatment occult blood does not disappear completely from the stools the symptoms are not completely relieved the roentgen defect does not disappear and the contour and tone of the stomach are not restored to normal.

With the exception of cases in which palliative gastro enterostomy is indicated for an inoperable malignant growth the surgery of gastric lesions should always be radical resection since all lesions that are not potentially malignant can be healed by medical treatment.

MORRIS H KAHN M D

Hurst A F The Precursors of Carcinoma of the Stomach *Lancet*, 1929, ccxvii, 1023

Hurst states that in about 75 per cent of cases of carcinoma of the stomach the condition is secondary to chronic atrophic gastritis. These include most cases with a short history, almost all of those with achlorhydria and most of those with hypochlorhydria. In about 35 per cent of cases the carcinoma is secondary to gastric polyposis which is probably a result of hypertrophic gastritis. In these, the history is generally long and achlorhydria is probably always present. In about 20 per cent of cases the carcinoma is secondary to chronic gastric ulcer. These constitute a large majority of the cases with a long history, all of those with hyperchlorhydria and a high normal acid curve and almost all of those with average normal acidity. In about 45 per cent of cases the carcinoma is secondary to a simple adenoma of the stomach. In these the history is likely to be short and the test meal shows nothing characteristic.

The author is convinced that all chronic gastric ulcers however large and however deeply they in-

volve the pancreas are capable of healing under prolonged medical treatment so long as they have not given rise to mechanical obstruction. He sees no reason for advising surgical treatment of a gastric ulcer producing no obstruction. For the less common prepyloric ulcer, he advises partial gastrectomy as it may be quite impossible to recognize early malignant changes by simple inspection and the X ray gives far less definite information than in the case of the more frequent ulcer of the lesser curvature.

Hurst discusses also the recognition, prophylaxis and treatment of chronic gastritis.

JACOB M MORA M D

Finney J M T The Development of Surgery of the Stomach *Ann Surg* 1929 xc, 829

Finney considers especially the part played by American surgeons in the development of the surgery of the stomach but cites also the contributions of others from the time of Hippocrates up to the present day.

The suture material of the early days consisted of large ant beads small filaments detached from the intestines of animals silk and linen.

The earliest surgical procedure on the stomach was the closure of accidental wounds. The first planned operation was reported by Gunther quoting Crolius. It was the removal from the stomach of a knife 9 in long by Mathis in 1602. The patient recovered.

Apparently the first operation performed on the stomach by an American surgeon was the suturing of a stab wound which was reported in 1822.

In 1837 Egeberg of Norway first recommended the formation of a permanent fistulous opening in the stomach through the abdominal wall. Nine years later this operation was given the name gastrostomy. Sédillot in 1849 reported the first case of planned gastrostomy performed on a human being. The patient died. The first gastrostomy by an American surgeon was performed in 1869 by Maury of Philadelphia.

Reference is made to the work of Merrem Billroth Czerny Kaiser Kocher Pean and others.

The first resection of the stomach was performed by Pean in 1879 and the first successful operation of this kind was reported by Billroth in 1881. The first pylorotomy performed by an American surgeon was done by Winslow of Baltimore in 1884.

Gastro enterostomy was first performed in 1881 and was reported by Woelfer of Billroth's clinic in the same year. Ransohoff of Cincinnati was the first American surgeon to perform this operation. He reported it in 1884.

Jaboulay in 1892 first suggested gastroduodenotomy and performed the operation two years later.

Gastrectomy was first performed in America by Conner of Cincinnati in 1884. Of the first dozen gastrectomies six were done by American surgeons. The first successful total gastrectomy was reported by Schlatter of Zurich in 1897 and the second by Brigham of San Francisco in May, 1898.

Crohn's studies of the immediate and late results in medically treated cases of duodenal ulceration agree in general with those reported by others. Crohn finds that the immediate results are very good: 86 per cent of the patients being apparently cured and only 14 per cent not benefited. Most of the recurrences become apparent during the second six months, when 34 per cent of seemingly cured patients develop unfavorable symptoms. In succeeding years new cases of recurrence are added, but not at the same rate of progression. Within four years 50 per cent of the apparently cured cases will have relapsed. On the other hand surgery according to its advocates will cure 90 per cent of the patients who survive the operation. After the operative mortality has been deducted, the percentage of patients who are immediately benefited by either medical or surgical treatment is essentially the same but as the length of time following the treatment increases recurrences appear more frequently in the medically treated group.

The choice of treatment may well be based on the age, temperament, and economic condition of the patient and the duration and severity of the symptoms. The patient who is over forty years of age, who has had symptoms either constantly or even recurrently over a period of years and who, because of temperament or lack of means is unable to follow the necessary dietary regimen is more properly a subject for surgery than the young man who has very recently developed signs of duodenal ulcer and whose occupation, means and temperament permit him to pursue a properly regulated and supervised course of medical treatment. If, after a fair trial of medical treatment the disease has not been controlled surgery seems to be indicated.

As definite indications for surgery the authors list perforation, organic obstruction, impaired motility, repeated hemorrhages, persistent pain or discomfort due to local peritonitis or perigastric or periduodenal adhesions, unrelieved pyloric spasm, chronicity, repeated failure of medical and dietetic measures to give relief when the treatment and after treatment have been wisely advised and conscientiously carried out, cases in which economic factors necessitate limiting the period of disability, the possibility of malignant degeneration of gastric ulcer as suggested by gradually falling acidity, persistent occult blood and slight lessening of the appetite, strength, blood count, etc., and the possibility that the ulcer may be secondary to or its symptoms kept up by disease of the appendix or gall bladder or both.

In 1927 the authors began a study of the late results following all operations which had been performed upon the stomach and duodenum in the Johns Hopkins and Union Memorial Hospitals in the years from 1900 to 1925. They believe that a period of at least two years must have elapsed before the late results of an operation for duodenal ulcer may be determined with any degree of assurance.

In 380 consecutive cases of operation for duodenal ulcer the operation most frequently employed was

pyloroplasty. This was performed upon 139 patients, 52 of whom were subjected also to an additional operation such as appendectomy or cholecystectomy. Gastro-enterostomy was done on 96 patients, 39 of whom had an additional operation. In the first six months there were 8 deaths, a mortality of 5.8 per cent in the first group and 16 deaths, a mortality of 16.6 per cent in the second group. The results therefore appear to indicate that the mortality during the first six months after operation is nearly three times greater after gastro-enterostomy than after pyloroplasty. In 15 cases in which partial gastrectomy was done for duodenal ulcer there were no immediate deaths.

In the groups of this series which were large enough for statistical purposes from 15 to 20 per cent of the patients could not be traced after their discharge from the hospital. Of 64 patients treated by gastro-enterostomy who survived the operation for six months, 54 (84.3 per cent) were living and in better condition two years or more after the operation. The corresponding percentage in the group treated by pyloroplasty was 85.8 per cent. Four (6.2 per cent) of those treated by gastro-enterostomy and 11 (10.3 per cent) of those treated by pyloroplasty who survived the operation for six months were not benefited. However, while 9.5 per cent of the patients subjected to gastro-enterostomy died after six months, only 3.7 per cent of those treated by pyloroplasty died after that length of time. The figures indicate that about 90 per cent of those who survive the usual surgical procedures are markedly benefited, but that this high percentage is reached only after an operative or immediate mortality of about 10 per cent for the entire surgical group.

In the evaluation of medical and surgical treatment of duodenal ulcer, it must be borne in mind that the two types of treatment are hardly comparable since surgery usually begins after medicine has failed. In the series of cases reviewed, pyloroplasty was done in the more favorable cases while gastro-enterostomy was reserved for cases in which pyloroplasty was not thought advisable—perhaps the more difficult cases. This may help to explain the favorable results under medical treatment and the rather high mortality rate after gastro-enterostomy.

MANUEL E. LICHTENSTEIN, M.D.

Mallet Guy, P. and Étienne Martin M. Pro-
lapse of the Left Blac Anus and Its Complica-
tion by Strangulation (Les grands prolapsus des
anus iliaques gauches et leur complication d'étran-
glement) *J de chir.* 1929 XXXIV 425

Prolapse is a frequent and very important complication of artificial anus. In the early stages it is a simple eversion of the mucous membrane. In a more advanced stage a mucous cylinder forms and the intestine everts outward. There may be a cylinder of intestine from 3 to 12 cm. long extending downward and inward. Associated with this prolapse there is always eversion, the wall of the abdomen for some distance around the opening is

spleen in febrile states as has been demonstrated by the author, Hueck and others. If the increased activity of the abdominal organs continues too long in persisting peritoneal infection biological exhaustion eventually occurs with irremedial injury of the cells. It has been demonstrated in animal experiments that the measurable total function of the stomach and intestinal cells decreases considerably after a certain time. Simultaneous with the decrease in the stimulation of secretion as the result of beginning biological insufficiency, blood and bacteria appear in the secretions. The exhaustion which follows excessive function may thus lead to profuse parenchymatous hemorrhages. However, these late results are rarely seen in clinical cases as death usually occurs before such an extreme exhaustive state of the intestinal wall supervenes. In experimental bacteremia the lymph obtained from the thoracic duct is at first sterile. It contains bacteria only in the later stages when red blood cells also appear. In the author's opinion this fact is further evidence that the clinical manifestations of paralytic ileus in peritonitis do not depend on functional paralysis of the bowel since the intestines retain the specific capacity for secretion and absorption and, above all of protecting the tissues until an extremely advanced stage of the disease.

From this explanation of the development of the paralytic state of the bowel the importance of the known therapeutic measures becomes evident. Most important would seem to be sweating and the application of heat to the skin to overcome the congestion of blood in the splanchnic area. In addition atropin and morphine should be given to reduce the increased transmission of stimulating impulses by the nervous apparatus. COKKALLS (2)

McWhorter G. L. Acute Obstruction of the Small Intestine Due to a Gallstone. Recovery Following Operation. *Arch Surg* 1929 xix 915

The author reports a case of acute intestinal obstruction due to a gall stone impacted in the lower ileum. Operative removal of the stone was followed by recovery.

A review of the literature indicates that such obstruction is most common between the ages of fifty and seventy years and is more frequent in women than in men.

The gall stones gain access to the intestinal tract by perforation from the gall bladder or by way of the common duct. In twenty five of thirty six cases studied by Courvoisier there was a fistula from the gall bladder into the duodenum. In one case a fistula into the ileum and in two cases, a fistula into both the duodenum and colon. The site of incarceration of the gall stones is usually found in the terminal ileum.

Roentgenograms may show characteristic evidence of intestinal obstruction together with the shadow of the stone.

The treatment is immediate operation. Enterotomy usually suffices. JACOB M. STORA, M.D.

Ellason E. L. and Hinton D. Chronic Duodenal Ulcer. *Surg Clin N Am* 1929 ix 1127

Most cases of duodenal ulcer can be divided into 4 groups according to the symptoms and pathological changes. In the first group may be placed those without symptoms until perforation of the ulcer occurs. The patients whose cases belong in this group are usually young and because of the absence of a suggestive history the condition is often incorrectly diagnosed. To the second group belong the chronic ulcers with recurrent exacerbations of the typical symptoms of hunger pain, food ease and periodicity. In the third group are chronic cases in which the lesion has become more fibrotic, rigid and contracted as the result of scar tissue formation. This process causes a change in the symptoms. Pain and dyspepsia become negligible and the local tenderness disappears but the patient complains of a feeling of fullness in the epigastrium. Perforation and hemorrhage are apt to occur. If they do not occur the picture changes to that characteristic of cases in the fourth group in which the ulcer is cicatrized, the lumen of the duodenum is narrowed, the duodenum and pylorus are distorted by adhesions, obstruction is the dominant feature and the patient complains of a constant bloated feeling associated with nausea. It is in such cases particularly that fluids in large amounts should be given parenterally or by rectum and in which spinal anesthesia is especially desirable.

Of 137 cases of chronic duodenal ulcer reviewed by the authors only 19 were those of females. Pain was the most common symptom occurring in 103 cases. Tenderness was present in 48 of the cases without rupture and 28 of those with rupture and rigidity was found in 14 cases without rupture and 29 of those with rupture. In only 11 cases was the X-ray report doubtful or negative.

WILBUR BAILEY, M.D.

Finney J. M. T. and Nathaniel E. M. The Surgical Treatment of Duodenal Ulcer. *Ann Surg* 1929 xc 904

A true evaluation of any therapeutic procedure is possible only when the natural history of the disease against which it is used is taken into consideration. In determining the therapeutic value of a surgical procedure such as pyloroplasty or gastro-enterostomy in duodenal ulcer two standards of comparison may be used. The first is the result obtained following expectant or medical treatment alone and the second the result following the use of other surgical procedures. As the cause and pathogenesis of duodenal ulcer are not yet clear, all forms of treatment both medical and surgical are based upon accumulated experience and are therefore largely empirical. Both medical and surgical procedures aim to relieve pain, secure better drainage, place the affected part at rest, limit the amount of trauma caused by the passage of rough and irritating foods, and eliminate any foci of infection that may be present elsewhere in the body.

of recurrence On account of its high mortality, the abdominoperineal operation is not favored by the author Verdis plan of preliminary colostomy with secondary removal after an interval of two weeks gave much better results with a mortality rate of only 12 per cent The majority of the lesions in the cases reviewed showed a low grade of malignancy They might be classified as adenoma destruens or as of Grade 2 in Broder's classification

The author describes the lymph node distribution as given by Grota and outlines his technique as follows

In cases in which the cancer is situated below the cul de sac the bowel is delivered through a supra-pubic incision and a sigmoid colostomy is made through a left gridiron incision In the second stage spinal anesthesia is employed The cecum and 2 or 3 segments of the sacrum are completely removed The bowel is then freed above the internal sphincter by careful dissection and divided by a Payr clamp and cautery above the sphincter The upper rectum is freed and all alveolar and glandular tissue removed down to the pelvic fascia The vessels running laterally to the rectum are severed, but the superior hemorrhoidal artery must be preserved The rectum is brought out through the sacral wound and removed The sigmoid is carried down through the dilated anus and sutured to the mucocutaneous juncture with interrupted chrome catgut The wound is then partially closed and packed with Penrose drains and iodoform gauze Two or more operations are sometimes necessary to close the wound The colostomy is closed after an interval of from two to four months to allow complete closure of the perineal wound

In the author's opinion the occurrence of downward metastasis from a tumor is due to the implantation of cancer cells at the time of operation

JONES believes that the diagnosis of carcinoma of the rectum is not given the attention it deserves by the physician He states that the textbooks stress the late symptoms Early signs such as blood in the stool and a change in the bowel habit should be investigated Irritative symptoms such as a sensation of gas in the bowel or unsatisfactory bowel movements are important Constipation is a late symptom as it is due to obstruction The use of the sigmoidoscope will disclose the source of any bleeding and will establish the presence of polyps or an ulcerative colitis Diverticulosis causes bleeding in only the acute stages A microscopic study should be made of polyps and other suspicious lesions

Since 1885 when the Krasko operation was introduced resection has been more radical and has been done more frequently The abdominoperineal operation is advocated by many surgeons but has not become generally popular An operation which includes a colostomy is often refused by the patient and the family physician is often at fault in not encouraging its acceptance when its great benefits can be readily demonstrated Proper care of the colostomy by the patient will result in maximal

comfort The objection that the combined operation with colostomy has a high mortality is answered by the serious character of the disease Local excision with a low mortality rate should not be compared with the combined operation with its larger mortality as each case must be treated according to its particular requirements

The author discusses variations of the one and two stage operations and presents the statistics of 285 cases in which the growth was removed The incidence of five year cure following all radical operations was 48 per cent in both general and private cases This does not include the immediate mortality in the hospital In cases treated by abdominoperineal or posterior resection the incidence of five year cure favors the former operation

WILLIAM J PICKETT M D

LIVER GALL BLADDER PANCREAS AND SPLEEN

Coller F A, and Troost F L Glucose Tolerance and Hepatic Damage *Ann Surg*, 1949 xc 781

Believing that a glucose tolerance test might be of value in determining liver function if a new interpretation were made of it, the authors performed the following experiment

Glucose tolerance tests were carried out on normal dogs Portions of the liver were then removed at intervals at which time the glucose tolerance was again studied The animals were fasted for twenty hours before the test Following the removal of blood from the veins they were given 1.75 gm of glucose per kilogram of body weight in 100 c cm of water by stomach tube At intervals of one, two, and three hours, blood specimens were withdrawn sodium citrate being used as the anticoagulant Blood sugar determinations were made according to the Folin Wu method Portions of the liver were removed in successive stages, and after each operation, following an interval of at least three days to allow any possible variation associated with the operation to disappear the glucose tolerance test was again repeated

It was found that as the larger portions of liver were excised the glucose tolerance test became altered The fasting level was much lower the level to which the blood sugar rose one hour after the administration of the glucose was definitely higher than in the normal animal and even after two hours remained almost as high as after one hour In fact in one animal the blood sugar level was higher after two hours than after one hour

The results obtained in two animals are given but no statement is made concerning the number of animals employed in this particular experiment

In order to compare the effects obtained by removal of liver with those of liver damage produced in other ways five animals after a preliminary glucose tolerance test, were given chloroform in oil subcutaneously After this procedure in contrast to the normal curves obtained before the injection of

weakened and apparently atrophied. The prolapse may become strangulated. The authors report seven cases representing the different stages.

In addition to too large an orifice the factors responsible for such prolapse are a too long mesentery and weakness of the abdominal wall. Therefore as preventive measures the colostomy opening should be made as small as possible and the wall reconstructed in three layers. The intestine and mesentery should be fixed either by Gangolphe's double ligature or by colopexy. One of the best prophylactic measures is avoidance of the use of a collecting apparatus. If the anus is properly made it will soon become continent. The patient may wear an ordinary abdominal band with a layer of cotton in front of the opening or in case of diarrhea a small inflatable pad.

When the prolapse becomes strangulated, operation must be performed otherwise gangrene with serious sepsis will result. Operation may be intra-abdominal or extra-abdominal. The authors believe that in the great majority of cases it should be extra-abdominal and that nothing more should be done than resection of the prolapsed part of the intestine. Operation is unnecessary in simple prolapse of the mucous membrane. **AUDREY G. MORGAN, M.D.**

Horsley J. S. Carcinoma of the Colon. *J. Am. M. Ass.* 1929 XLIII 1372

The type of operation best suited to malignancy of the colon depends on the extent and nature of the growth, the patient's general condition and the presence or absence of obstruction. If there is acute obstruction nothing more should be done than enterostomy. If the cancer is operable it should be excised after several weeks of general pre-operative preparation consisting of irrigations through the enterostomy tube, the intravenous administration of glucose and saline solution in amounts of from 1,000 to 2,000 c.c. a day and a high calorie diet of carbohydrates without animal proteins. The intra-peritoneal administration of vaccines prepared from fatal cases of streptococcus and colon bacillus peritonitis has also been found of value.

As a rule, the multiple stage operation of Mikulicz will be found preferable to the more ideal primary anastomosis. However, it is advantageous to modify the typical four stage Mikulicz by extra-peritonealizing and excising the growth in one rather than two steps as this removes the chance of contamination by cancer cells and the absorption of toxic material from the growth.

WILBUR BAILEY, M.D.

Bowing H. H., Fricke R. E. and Smith N. D. The Treatment of Malignant Tumors of the Rectum by Radium and Roentgen Rays. *Radiology* 1929 XLII 443

The majority of the cases reviewed were inoperable, because of the size and extent of the primary lesion, local metastasis, metastasis to important viscera or poor general condition. Adenocarcinoma

of a rather moderate degree of malignancy predominated. These tumors are sensitive to irradiation but vary in their degree of sensitiveness.

In the cases selected for irradiation alone colostomy is of secondary importance, but if the indications are definite it should be done. Colostomy splints the bowel, facilitates cleansing and aids thorough treatment.

The diagnosis is usually made readily by palpation and proctoscopic examination. Biopsy is necessary in only a few cases. However, a specimen should be removed since the grading of the malignancy of the tumor is important to both the surgeon and the radiologist.

The size, character, situation, and grade of malignancy of the rectal growth as well as the patient's general condition should determine the treatment. A standard treatment should not be employed in all cases. As yet definite recommendations regarding the most effective treatment cannot be made.

The risk of treatment with radium is very slight. Radium and roentgen rays alone in selected cases or in combination with surgical procedures will give the best results. Every endeavor should be made to individualize the treatment. Prophylactic treatment seems indicated in all cases in which adequate surgical intervention is employed but can be applied only as a routine measure. All patients should be under careful and repeated observation.

Palliation can be expected from reducing the potentials for destruction inherent in the primary growth. Improvement is manifested by a decrease in the rectal discharge and the pain, reduction of the size of the tumor and cessation of the bleeding.

The results are in the main encouraging. There must be full cooperation of all concerned in the care of the patient. The assistance of a competent proctologist is highly desirable.

Verdi W. F. Resection of the Rectum for Cancer and Continuity Restored. *Ann. Surg.* 1929 XC 669

Jones D. F. End Results of Radical Operations for Carcinoma of the Rectum. *Ann. Surg.* 1929 XC 673

VERDI states that in cases of cancer of the rectum the intricate network of lymphatics in the rectum prevents a block resection such as is possible in cancer of the tongue and cancer of the breast. When surrounding structures are involved the condition is considered inoperable and nothing more than simple colostomy is done.

Rectal cancers situated below the cul de sac are operated on by the sacral route, and those situated above the cul de sac by the abdominal route but in every case an abdominal exploration should be done first to determine the extent of the disease and the presence of metastasis.

Verdi reports 60 cases. Thirty-four of the patients were men. The 1 patient who died survived for five years. All of the others (some of whom were operated upon nine years ago) are well with no signs

preserves in miniature the contour of the original shadow. Elastic recoil would change the shape of the shadow, washing out would disrupt its regularity and muscular contraction would compel the final shadow to be a shadow of the infundibulum and neck of the gall bladder. The only explanation that fits in with these facts is the uniform absorption of the dye by the entire inner surface of the organ.

Because of the divergent interpretations of the observations cited, Sweet is of the opinion that the question of gall bladder drainage is not settled. He can see no reason why bile from the gall bladder is at all necessary in digestion. He believes that the gall bladder collects the bile during the absence of digestion for the purpose of conserving the bile salts.

MANUEL E. LICHTENSTEIN, M.D.

Lund F. B. *The Importance of Medical Care and Consultation in Cases of Gall Bladder Disease Also the Advantage of Spinal Anesthesia in Operations on the Gall Bladder* *England J Med* 1919 cct 1089

Lund states that gall bladder diseases with their accompanying lesions of the heart, lungs, arterial system and kidneys occur as a rule in persons of more or less advanced age and perhaps require more judgment as to the time and character of operation and more manipulative skill than any other class of surgical conditions. The surgeon should see his cases before operation and decide when and how long medical treatment should be continued. When the condition of the heart and kidneys is poor and perforation with abscess formation has occurred medical treatment will be of no benefit until the abscess is drained.

The chief indications for spinal anesthesia in gall bladder surgery are the presence of bronchitis or other respiratory trouble and cardiac disease. Each case must be treated according to its particular requirements. Sometimes the removal of the gall bladder is very easy and sometimes it is difficult and dangerous. In cases in which the gall bladder shows definite pathological changes it should be removed if this can be done with safety. In cases of gall stones it should be removed to prevent recurrence. However in the cases of obese patients in poor condition in which excision is so difficult as to add definitely to the risk, drainage should always be done.

Röntgenograms made with the use of dye are a distinct aid, yet gall bladders which fill with the dye may be infected and require removal. They fill because the cystic duct is open. On the other hand gall bladders which for some reason do not fill may not be pathological. The symptoms are of paramount importance.

Drainage is established by means of a stab wound in order that the operative incision may be closed without drainage. If a considerable quantity of bile has been spilled it may be drained by a bit of rubber tissue passed down to the peritoneum.

FORBES H. KAHN, M.D.

Rowlands R. P. *Surgery of the Gall Bladder and Bile Ducts* *Lancet* 1929 ccxvii, 1075

Following a historical review of surgery of the gall bladder and bile ducts, the author emphasizes the importance of a thorough study of the anatomy and pathology of the biliary tract before operations on the biliary organs are undertaken. He reviews the anatomical variations of the gall bladder, bile ducts and blood vessels as reported by Flint and others and urges adequate exposure in order that anomalous structures will not be injured.

He states that about 10 per cent of adults have gall stones and many more have cholecystitis. Gall stones may remain dormant for a long period and may be discovered only accidentally during routine examinations or after death. The general indications for operation are obstruction and infection of the biliary tract. The mere demonstration of gall stones or cholecystitis by X-ray examination is not a sufficient indication for operation. When symptoms persist or recur in spite of medical treatment, early operation is advisable.

In acute cholecystitis it is safer, when possible, to wait for subsidence of the symptoms before operating. Emergency operations should be limited to simple drainage of the gall bladder.

The mortality in biliary surgery has been greatly reduced by adequate pre-operative preparation of the patient and by the administration of sugar, hexamine and calcium chloride intravenously when necessary. Septic foci in the mouth, nose, and throat are treated to lessen the risk of pulmonary complications. Ether is the preferred anesthetic but twilight sleep with local infiltration or spinal anesthesia may be used.

Rowlands prefers the Kocher incision with severance of the rectus muscle for gall bladder surgery, and a right paramedian incision for exposure of the common duct. Drainage when necessary, is effected through a stab wound.

If the clinical history, physical examination and cholecystography indicate that the gall bladder is diseased it is generally best to perform a cholecystectomy although the organ may not look very abnormal.

It is important to remember that stones may remain in the common bile duct for years without causing jaundice. The author has seen obstruction of the common duct from hydatid daughter cysts and from a slough derived from the turned in edge after cholecystostomy.

If there is jaundice due to chronic pancreatitis or carcinoma, cholecystogastrostomy is the procedure of choice. It is easier and is followed by fewer complications than cholecystoduodenostomy, and it relieves the intolerable itching and the risk of bleeding, and prolongs life in comfort for at least many months.

Plastic operations on the common duct are difficult and dangerous. Direct suture over a rubber tube is usually practicable if not direct suture of the common duct to the duodenum by the Mayo method or the flap operation of Walton is indicated.

chloroform the glucose tolerance was distinctly abnormal in that the fasting sugar level was low and the sugar level after one and two hours was abnormally high.

The authors conclude from these experiments that dogs with liver damage are unable to form glycogen, which is responsible for the low fasting blood sugar level and the liver has a decreased capacity for removing glucose from the portal veins following the ingestion of glucose.

Similar observations were made in ten clinical cases with definite intrinsic hepatic lesions. In each case a curve was obtained which was comparable to that obtained in animals with liver damage i.e. there was a low fasting blood sugar followed one and two hours after the ingestion of glucose by abnormally high levels, the level after two hours remaining almost as high as the level after one hour. In a control series of patients with jaundice but without intrinsic liver disease normal blood sugar curves were obtained except in three cases of obstructive jaundice. In the latter the curves were abnormal, but returned to normal following relief of the obstruction.

In summarizing their work, the authors conclude that in liver damage a typical type of glucose metabolism is present, namely a glucose-tolerance which is similar to that seen in diabetes. However the fasting blood sugar is low, which will distinguish the condition from diabetes. They believe that a glycosuria associated with low fasting blood sugar indicates liver disease rather than diabetes.

ALTON OCHSNER M.D.

Nadler W. H. and Wolfer J. A. Hepatogenic hypoglycemia Associated with Primary Liver Cell Carcinoma. *Arch Int Med* 1929 xlv 700

In a case of spontaneous hypoglycemia apparently of hepatic origin which is reported by the authors attacks of hypoglycemia dominated the clinical picture for three and a half months. A primary liver cell carcinoma comprising from 70 to 80 per cent of the total liver mass and associated with metastases in the regional glands, mediastinum and lungs was found. The remaining liver structure was deficient in glycogen and showed microscopic evidence of degenerative changes. The tumor cells possessed no characteristics of islet cells and contained no insulin.

HOWARD A. McKNIGHT M.D.

Sweet J. E. The Function of the Gall Bladder. *Ann Surg* 1929 xc 939

Sweet believes that the gall bladder is an organ of absorption and that under normal conditions whatever passes into it through the cystic duct never passes out again through the cystic duct. This conclusion is based on a study of the embryological history of the organ, the development of the remarkably duplicated and folded mucosa, the peculiar blood supply and the elaborate and relatively large lymphatic system of the organ, the parietal sacculi and their apparent reaction to cholecystectomy, the

relation of the muscular coat to the mucosa, the anatomical position of the organ, the broad attachment of the gall bladder to the undersurface of the liver, and the two valvular structures at the outlet, the S shaped curve of the cystic duct and the curious valves of Heister.

In Sweet's opinion the theory that the gall bladder empties through the cystic duct is based upon faulty interpretation of the results of experimental investigation. Direct observation is open to the criticism that abnormal factors are introduced such as interference with the blood supply or lymphatics. It is noteworthy that the gall bladder has been found empty only in animals which showed by the injection of the lacteals that absorption in general was in progress.

A study of the gall bladder with the X rays following the direct injection of lipiodol into the organ at laparotomy is valueless as lipiodol is a non-physiological substance. It is not absorbed by any of the membranes of the body and it acts as a plug on the absorbing surface of the mucosa of the gall bladder inhibiting a normal process.

The value of the use of Grisham's dye given by mouth intravenously or by injection at laparotomy depends on the selectivity of the liver for this substance in the blood stream. When the cystic duct was ligated Copher found that the shadow persisted and attributed this finding to the inability of the dye to leave the gall bladder. Sweet interprets it as indicating a constant circulation of the dye from the gall bladder to the blood stream thence to the liver and back again to the gall bladder. When a 10 per cent solution of sodium iodide is used instead of the specific dye a shadow is cast which disappears within a short time under the same experimental conditions. This is due to the non-specificity of the substance. Removal is effected by organs other than the liver. Therefore the sodium iodide is not returned to the gall bladder.

When iodized phenolphthalein is employed the non-disappearance of the gall bladder shadow during fasting is explained as due to the constant circulation of the dye. Specific removal from the blood stream by the liver cells followed by excretion into the bile with eventual resorption from the gall bladder is the mechanism involved. When food is introduced into the intestine the sphincter of Oddi relaxes and the dye containing bile runs into the intestine instead of the gall bladder. In the presence of food and digestive secretions it must be changed into a non-absorbable form. This is evidenced by the well known fact that if the dye is given with food no gall bladder shadow appears. Food then especially fat, accomplishes three things. It opens the common duct, breaks the circulation of dye and changes the dye in the intestine into a non-absorbable form. Thus the elimination of the dye eventually leads to fading of the gall bladder shadow.

It is characteristic of the disappearance of the dye from most human gall bladders that the shadow diminishes in size, retains its original density and

fluid the so called "white bile" the presence of which is an indication of severe hepatic insufficiency. Of the six who recovered from the operation three had a carcinom of the ducts from which they died at a later period. Two of them showed the presence of white bile at the time of operation but survived for four and fifteen months respectively. In three cases the operation was performed for obstruction due to chronic pancreatitis and the presence of some condition which prevented the performance of cholecystoduodenostomy or gastrostomy. These patients are alive and have been free from all symptoms for three six and six years respectively since the operation.

JACOB M. MORA M.D.

Haberer von Surgery of the Biliary Tract (*Zur Gallenchirurgie*) *Zentralbl f Chir* 1929 p 1496

On the basis of his large experience the author advocates early operation in cases of gall stones. He cites a material of 804 cases in which he operated. First he calls attention to the surprising difference between the biliary diseases which he saw when he was living in the Alpine country and those he sees now in the region of Duesseldorf. He has been obliged to change many of his opinions. In Vienna he saw very numerous cases of medium severity, whereas in Innsbruck the number of such cases was small because in the Tyrol country gall stone disease is rare. As the cases seen in the Tyrol country were mild, von Haberer recommended closure of the abdomen without drainage when he was living there. In Steiermark he saw so many severe cases that he was less often able to close the abdomen without drainage. Formerly he operated almost exclusively under conduction anaesthesia combined with splanchnic anaesthesia but in Duesseldorf partly because of the obesity of the patients and partly because of their surprising sensitiveness he has seldom been able to use local anaesthesia.

The cases seen in Duesseldorf are very difficult to treat. They all come for operation very late after attacks recurring over a period of years and the great majority of the patients are much over forty years of age, some of them being between sixty and seventy years old. As far back as 1925 von Haberer emphasized that the danger of operation is increased not so much by advanced age in itself as by the organic injury, especially injury of the liver and pancreas which is found in old persons because of long-continued neglect of the disease. Patients between sixty and seventy years of age do not differ in their postoperative course from younger patients if they have had the disease for only a short time. In the Rhineland von Haberer was impressed by the severe damage to the liver and pancreas in patients who came to operation at a relatively early age but had had their disease for a long time. In his twenty eight years of surgical practice he has been obliged to operate for pancreatic necrosis twenty five times and nine of these operations have been performed in the ten months he has been at Duesseldorf.

In his present practice von Haberer finds cholecystotomy necessary much more frequently than in his previous practice. As a rule it is indicated because of liver damage. He states that the question as to when he operates in cases with icterus is easily answered as the cases come to operation so late that operation is to be classed as urgent. The danger of delay in the presence of icterus is so great that he regards immediate operation as less dangerous.

In the cases of most of the 58 patients between sixty and seventy years of age upon whom von Haberer has operated, protracted drainage of the deep biliary passages was necessary. The mortality was 27 per cent. In the cases of old patients who were operated upon in an interval between attacks, the mortality was only 8 per cent. Von Haberer therefore endeavors to avoid operating during an attack as under such conditions the mortality is always very much greater. He is of the opinion that immediate operation is indicated only when a severe injury of the gall bladder wall cannot be excluded, when there is danger of perforation and when involvement of the pancreas is probable or evident.

Pancreatitis sometimes develops very insidiously without marked symptoms. Acute pancreatitis can be recognized at operation even in the absence of fat necrosis and clinical symptoms. A gelatinous oedema is found in the region of the hepatoduodenal ligament and sometimes also in the region of the fatty tissue around the hepatic flexure of the colon.

Operation during an attack is indicated when icterus has been present for some time.

Von Haberer now well understands the objections to his recommendation of closure without drainage, as in his present practice primary closure is seldom possible.

He believes that in our modern conception of biliary surgery, too little importance is ascribed to cholecystostomy. He regards this operation as indicated in neglected cases which require surgical treatment in the inflammatory stage and in cases in which as the result of numerous attacks, there are numerous cicatricial changes at the neck of the gall bladder and in the deeper biliary passages. The danger of the procedure has been greatly decreased. Von Haberer has never regretted performing cholecystostomy even when the fistula did not close and a secondary cholecystectomy was necessary. Cholecystostomy does not render cholecystectomy more difficult; on the contrary, it facilitates the removal of the gall bladder as it improves the patient's general condition and causes subsidence of the inflammation.

When cholecystectomy is imperative, additional injuries cannot always be avoided. The author cites a case of perforated gall bladder in which he accidentally removed a piece of the common duct 3 cm. long. The accident was recognized at once and the defect bridged by a T-drain. On the basis of von Haberer's previous experience the T drain was not stoppered until after several months. The patient was discharged without any external loss of bile.

In 251 operations for gall stones and cholecystitis at Guy's Hospital, London, the mortality was 2.8 per cent, and in 175 private cases, it was 6.3 per cent. Two deaths following cholecystostomy were due to perforation of the gall bladder causing a subdia phragmatic abscess in one case and general peritonitis in the other. Two deaths following cholecystectomy were due to pneumonia and pulmonary embolism. Another death was due to perforation of the gall bladder with suppuration in the liver. Five deaths following choledochotomy were due chiefly to hepatic insufficiency in late cases.

Cholecystostomy affords complete and permanent relief of symptoms in only about 45 per cent of cases. Failures are due to overlooked stones, the formation of more stones, or persistence of inflammation in the walls of the gall bladder.

Cholecystectomy affords complete relief in about 86 per cent of cases. Postoperative persistence of symptoms is generally due to residual infection in the liver or pancreas or to overlooked stones in the ducts, errors in diagnosis, osteo arthritis of the spine or spastic mucous colitis.

Choledochotomy is generally very successful. Persisting symptoms are usually due to overlooked stones, stones descending from the liver, strictures in the duct, obstruction by a blood clot, pancreatitis or cholangitis.

STANLEY H. MENTZER, M.D.

Walton, A. J. Reconstruction of the Common Bile Duct. *Surg. Gynec. & Obst.* 1929, *xliv*, 526.

Walton describes reconstruction of the common bile duct as the formation of an entirely new lower portion of the duct and its opening as distinct from end-to-end suture. This surgical procedure may be required after complete division of the duct either accidentally or by design, or when the duct is still present but shows an irremovable obstruction. Of Walton's series of twenty-four reconstructions, eight were necessitated by accidental division of the duct during an operation performed by another surgeon.

Terminal and lateral reconstruction are described. The former is rendered difficult when the duct has been divided very high up. It is performed as follows:

The duodenum is mobilized until it can be drawn up without tension to the hilum of the liver. In some cases in which the remaining portion of the common bile duct is sufficiently long, this mobilization may permit direct implantation of the duct into the duodenum, a method which should be carried out whenever possible, but in the majority of cases the remaining portion of the duct is of insufficient length and a true reconstruction is necessary. A catgut suture is passed through the upper border of the duodenum and through the posterior wall of the divided duct and tied, the two structures being thereby drawn as nearly into apposition as possible. The union between the divided duct and the upper border of the duodenum is then completed. A flap is then cut on the anterior surface of the duodenum in such a way that the resulting opening in the

duodenum will be immediately opposite the cut end of the duct and the flap is turned down. The upper portion of the opening of the duodenum is sutured until the opening that is left below is of the same caliber as the divided duct. A piece of tube about 1½ in. long and of the largest possible diameter is inserted into the divided duct and sutured in place with one stitch of plain catgut. Its lower end is then inserted into the opening in the duodenum and the flap turned up over it. In the upper portion the flap is sutured carefully to the duct and laterally it is sutured to the anterior wall of the duodenum which lies behind the tube.

By this procedure a free but valvular opening is made and the new portion of the duct is formed by the flap of the duodenum which is lined with mucosa accustomed to the passage of bile. A tube is inserted down to the juncture, in case there should be any leakage and the wound is then closed.

It is this type of operation which is most frequently required. When once the proximal end of the duct has been recognized and isolated, the operation is simple to perform and a new duct of practically any length can be fashioned from the duodenal wall.

The steps in lateral reconstruction are very similar. A lateral opening is made into the dilated duct as close to the duodenum as possible. If there is any gap between the opening and the duodenum, the wall of the latter structure is drawn upward and sutured to the duct immediately below the opening. A tube is inserted into the duct and sutured in position with plain catgut. A flap is then made in the duodenum in the usual way and sutured around the tube again, a valvular opening lined with duodenal mucosa being thus formed. In either case a tube is inserted down to the juncture for a few days in case there should be any leakage of bile. The bile should immediately pass along the tube into the duodenum.

The author's series of twenty-four cases included nine of terminal reconstruction, twelve of lateral reconstruction, two of immediate end-to-end suture and one of overlooked division.

In the nine cases of terminal reconstruction there were two deaths as the result of the operation. In one of these fatal cases the operation was performed after the resection of a carcinoma of the duct and in the other after an operative injury sustained five months previously. Three patients have remained well and free from all symptoms for periods of ten, four and one half and three years respectively and one has had slight occasional attacks of jaundice. In two cases in both of which several previous attempts at reconstruction had been made and examination showed very narrow ducts far up in the hilum of the liver, the operation failed, the obstructive jaundice having recurred. One patient died three years after the operation with jaundice and pyrexia.

Of the twelve patients with lateral reconstruction, six died as the result of the operation, but three of these had far advanced carcinoma of the lower duct and in three the ducts were full of a clear mucoid

diastase The Unger and Heuss modification of the Wohlgemuth test for blood diastase was used

Isolation of the tail of the pancreas resulted in a small but definite initial rise in the diastase in the blood followed by a second marked rise beginning between the sixth and eighth days In dogs in which both the head and the tail of the pancreas were ligated, immediate sharp rises were observed On about the tenth day the values became normal and remained so As histological studies showed that the initial edema after ligation subsided at about the tenth day, the coincidence of histological observations with the rise in blood diastase was striking When both the head and the tail were ligated an immediate sharp rise in the blood diastase occurred but no secondary rise was noted

The blood diastase is a sensitive index of acute pancreatic obstruction but is increased only in acute conditions This is easily understood when it is recognized that the acini whose excreting ducts are obstructed undergo degeneration The authors believe that the high diastase values following glandular ligation return to normal within two weeks because acinar elements in the ligated portion cease to excrete

STANLEY H. MENZIES, M.D.

Warren S. The Pathology of the Pancreas in Non Diabetic Persons A Study of 156 Consecutive Autopsies on Non Diabetic Patients
Arch Int Med 1929 xlv 603

The pancreatic lesions found at autopsy in 156 unselected non diabetic patients are summarized The author states that practically any lesion found in the pancreas of diabetic patients can be duplicated in the pancreas of non diabetic patients although lesions of the islands are much less frequent in the latter group

Interstitial pancreatitis occurs too often in non diabetic patients to be considered a characteristic lesion of diabetes

Lipomatosis is frequently related to the amount of body fat

Warren concludes that it is impossible to diagnose the presence of or absence of diabetes from a study of the pancreas

HOWARD A. MCKENIST, M.D.

Grégoire R. The Difficulty of Diagnosis in Chronic Pancreatitis (De la difficulté du diagnostic des pancréatites chroniques) *Bull et mém Soc nat de chir* 1929 lv 1124

Cancer of the head and neck of the pancreas generally develops rapidly and is accompanied by great pain but the author reports a case in which it developed very slowly and before causing terminal cachexia produced compression of the bile tracts the pancreatic ducts and the digestive tract

The patient was a woman forty seven years of age who lived for two years and three months after the beginning of symptoms The cancer was without doubt of longer duration than that as it did not cause symptoms until it interfered with the function of the bile tract When the patient first came for

treatment in February, 1924, she had had slowly progressing icterus for about four months She had lost weight and appetite but had been free from pain and fever As it was impossible to make a diagnosis of the cause of the retention icterus operation was performed The bile ducts and gall bladder were found slightly distended, and in the head of the pancreas there was a diffuse induration about the size of a nut It was impossible to be sure whether the induration was due to chronic pancreatitis or a beginning tumor but as the patient was in good general health a palliative gastrocholecystostomy was performed

When the patient was seen again ten months later she was in excellent health without any icterus but in April 1925 she began to have progressive signs of occlusion of the duodenum, and on April 25 she had an attack of tetany A diagnosis of occlusion below Vater's papilla was made and confirmed by roentgen examination Operation showed that the occlusion, which was not total was caused by a process of hard pancreatic tissue The head the neck and a little of the body of the pancreas were as hard as wood Duodenojejunostomy was performed The patient recovered from the operation but her general health grew progressively worse and she died early in March 1926

AUDREY G. MORGAN, M.D.

MISCELLANEOUS

Bruce H. A. Some Unusual Types of Abdominal Hemorrhage *Ann Surg* 1929 xc 776

Four unusual cases of abdominal hemorrhage are reported

In the first case that of a girl seventeen years of age, an intraperitoneal hemorrhage was caused by a teratoma of the ovary About two weeks previously the patient had been seized with severe abdominal cramps These had more or less subsided but on her admission to the hospital there was evidence of an acute abdominal condition

Laparotomy disclosed a tumor to the right of the uterus which was first thought to be a tubal gestation but was found to involve only the ovary The tumor was removed After the operation the patient got along very well for about a week Signs of internal hemorrhage then appeared the left chest sounded flat on percussion auscultation revealed feeble and distant breath sounds and the temperature rose to 106 degrees F The patient became weaker and died fourteen days after the operation

At autopsy the peritoneal cavity was found to be normal but the left pleural sac contained about 2 qt of fluid blood The left lung was a hard fibrous mass adherent to the parietal pleura The right lung was smaller than normal and presented numerous dark areas

Microscopic examination of the lung revealed evidence of hemorrhage and edema and a number of alveoli containing groups of small cuboidal cells which resembled the Langhans cells of the chorion

The drain was not removed until ten months after the operation. In another case the ligature around the cystic duct cut through the rigid and inflamed tissue and such severe cicatricial changes resulted that it finally became necessary to implant the central stump of the common duct into a duodenal fistula.

Von Haberer is becoming more and more conservative in making the diagnosis of gall bladder stasis as the distended unexpressible gall bladder is often healthy. While we know that a diseased functionless gall bladder can be removed without harm this does not mean that the removal of the normal organ which has a pressure regulating function is equally harmless. The diagnosis of gall bladder stasis should be made only exceptionally as few patients with the condition are rendered free from symptoms by operation.

The author has learned also to know peritonitis following cholecystectomy. It was explained to him by a case in which small drops of pus oozed from the smooth peritoneal covering of the gall bladder bed as out of a sieve. This was either an infection of multiple small lymph channels in the presence of empyema of the gall bladder or the escape of pus from the gall bladder into an aberrant duct, the importance of which is not very generally realized.

The disturbances following gall bladder operations are in large part responsible for the internists' dissatisfaction with operative treatment. Some of them are attributed to so called recurrent stones, but these are usually stones that have been overlooked in the common bile duct. Other postoperative symptoms are due to overlooked ulcer of the duodenum, the chronic pancreatitis which is frequently associated with persistent biliary tract disease or the unhealed infection of the intrapancreatic bile ducts mentioned by Popper in 1920. Such conditions which may be associated with colics with or without icterus have often been observed by von Haberer. In 4 cases he was obliged to drain the deep bile ducts. So called postoperative adhesions in themselves seldom cause severe symptoms but overlooked stones and overlooked ulcer make surgical statistics worse. Other suggested causes of postoperative disturbances are apparently the results of neglect and accordingly reflect upon the internist rather than the surgeon. SCHWENEMANN (Z)

De Takars G. Correlations of Internal and External Pancreatic Secretion. I. General Considerations and a Review of the Literature. II. The Histological Changes in the Isolated Tail of the Pancreas. *Arch Surg* 1920 77: 771-775.

De Takars G. and Nathanson I. T. Correlations of Internal and External Pancreatic Secretion. III. The Effect of Ligation of the Tail of the Pancreas on Diastase in the Blood. *Arch Surg* 1929 88: 783.

Several investigators have reported an increase in sugar tolerance following isolation of the tail of the pancreas. Some have found the increase temporary while others have noted its persistence for several

years. Because of this discrepancy, De Takars made a histological study of the acini ducts and islands in an isolated portion of the pancreas.

Isolation of the tail of the pancreas was effected in dogs by the application of a massive ligature around the gland section of the gland between two ligatures, or division with the electric cautery. Sections were taken from the isolated portion of the gland at various intervals.

Two days after the separation of the tail the dominating picture of the isolated portion was that of oedema. After two weeks this portion looked anemic and grayish white and was hard and nodular. The individual lobules were compressed and separated from each other by a moderate increase of connective tissue. The islands were well preserved. After four weeks the tail was even more sclerotic. It had turned into a whitish narrow cord. The acini were hardly recognizable but the islands stained well and were still prominent. After six weeks the tail was completely atrophic and acinar structures could not be recognized. There was a marked proliferation of the minute ducts and occasionally small buds papillary folds and cystic dilatations were found. The islands were still preserved. After twelve weeks the atrophic had progressed still further and connective tissue had proliferated into the small irregular lobules. The islands were numerous and showed mitotic activity. They were not only well preserved but also large in diameter. After sixteen weeks a diffuse sclerosis was present the vessels had thick walls but were patent. Small ducts were numerous and many minute ducts were visible. Large masses of macrophages and histiocytes were present in the connective tissue. Groups of epithelial cells had the appearance of islet tissue and were identified as such by special stains. These islets had a diameter from three to thirty times the normal. In many instances they were grouped around small ducts.

After twenty four weeks no acinar elements could be detected. Islet tissue was well preserved with typical capillary arrangement. A transplant of a portion ligated twelve months previously had been made into the omentum. In the omental fat a large number of ducts with thick walls and infolding epithelium were seen. The only other cellular elements present were large structures of dendritic design with sharply staining nuclei. These were drawn out into narrow cords or formed round or oval structures with a lumen in the middle as if they originated in the ducts. This picture was seen in five such transplants.

De Takars and Nathanson studied the blood diastase of dogs following ligation of the tail of the pancreas. It had been shown by others that the diastase in the blood rises for a short time following ligation of the duct. Histological studies revealed marked oedema of the separated tail for the first two weeks followed by gradual atrophy of the gland. Attempts were made to correlate these morphological observations with the values of blood

Golden R and Reeves R I The Significance of Calcified Abdominal Lymph Nodes *Am J Roentgenol* 1929 xii, 305

Tuberculosis of the mesenteric lymph nodes has frequently been found at autopsy without evidence of tuberculosis in the lungs or intestines. It is the sole important cause of calcified lymph nodes in the abdomen. The lymph nodes most frequently involved are those which drain the ileum caecum and appendix and the proximal part of the ascending colon. Tuberculous mesenteric lymphadenitis is doubtless sometimes responsible for unexplained fever and abdominal symptoms.

The outstanding symptom is pain in the right lower quadrant of the abdomen or around the umbilicus. The pain may be dull and dragging or may occur in colicky attacks. Examination usually reveals one or more tender spots and occasionally some rigidity in these areas. The white cell count is not increased even during the attacks. Before operation the diagnosis can be made with certainty only by demonstrating typical calcified nodes in the roentgenogram.

Surgical intervention is indicated when hygienic treatment proves unsatisfactory and when the symptoms are so violent as to suggest a complication such as intestinal obstruction or acute appendicitis. Even when only partial removal of the diseased nodes is possible, the pain usually ceases a short time after the operation and under postoperative hygienic treatment the patient will remain free from symptoms.

WILBUR BAILEY M D

Hosemann G The Recurrent Retroperitoneal Lipoma I Clinical Considerations (Ueber das wiedererleidende retroperitoneale Lipom I Klinischer Teil) *Arch klin Chir*, 1929 clv 336

The pararenal and retroperitoneal lipoma differs from other lipomata in its unrestrainable growth and its tendency to recur after even the most thorough extirpation. Its removal is difficult because of its size and its growth around the ureter, kidney, blood vessels and intestines. It recurs in spite of the complete absence of signs of malignancy in its microscopic structure.

Von Wahlendorf has reviewed 165 cases. Schwalbe's theory that the tumor arises in congenital Anlagen and is a dysontogenetic blastoma appears to be correct.

The development of the tumor is insidious. Because of the deep location of the neoplasm and the absence of special symptoms in the beginning the surgeon does not see the case until late. The tumor displaces the kidneys and intestines and causes hydronephrosis, stasis in the legs, venous thrombosis, uremia from bilateral renal injury, ileus from its growth around the intestines, emaciation, anorexia, cachexia and marasmus. Not rarely it is mistaken for a renal or ovarian tumor.

The treatment can be only surgical. Roentgen irradiation has no effect. The operative mortality varies from 25 to 38 per cent. Frequently it has been

necessary to remove a kidney or resect the intestine. In 2 cases, ligation of the iliac vein had to be done. Laparotomy gives the best exposure. Recurrences have been known to develop even after six years.

The author reports the case of a man fifty one years of age who was operated upon radically twice during a period of a year and a half. After each operation and after the patient's death, which occurred from recurrence and cachexia seven years after the first operation, the tumor masses were examined most thoroughly, but no area in the least suggesting malignancy—not even enlarged lymph nodes—was discovered.

SIMON (Z)

Wilkie, D P D Some Principles in Abdominal Surgery *Lancet* 1929 ccxvii 833

The fundamental law of operative surgery is gentleness. Its observance is particularly important in operations on the abdomen. Traction and tension must be avoided. The normal state of the abdomen and its contents is one of relaxation. When disease or operative measures interfere with this relaxation and introduce tension, pain results. In any major abdominal operation adequate exposure is of prime importance in order that lesions may not be overlooked. A second cardinal necessity is effective mobilization. Immobile organs must be mobilized by strategy based on anatomical facts rather than by force. This is demonstrated in resections of the colon, duodenum and appendix, and particularly in removal of the spleen. In the mobilization of these organs there are two structures to be divided, first, the peritoneal folds which retain them and second, the thickened extraperitoneal cellular tissue known as the fascia propria. The division of the extraperitoneal fascial bands helps most in the immobilization process.

In resections of the gastro intestinal tract, leakage from a suture line is usually due to tension resulting from inadequate mobilization. For safe anastomosis the layers must be sutured together without undue tension. The ideal method of anastomosis is the use of a single layer of interrupted Lembert sutures, lightly tied so as not to interfere with the blood supply. When continuous sutures are drawn tight the margins are usually strangulated and infected sloughs and leakage result. Tension within the bowel from the retention of gas may be relieved and drainage of the lumen accomplished by enterostomy or ceostomy.

Most abdominal pain, excluding that due to irritation of the parietal peritoneum, results from spasm of or tension in the hollow viscera. No form of intra abdominal tension is more important than that of the acutely obstructed appendix. Two distinct pathological processes occur in the appendix, namely, acute infection of the wall and acute obstruction of the lumen. In the former the temperature rises, but in the latter, fever is absent during the early phase when diagnosis is most important. Ninety per cent of the deaths from acute appendicitis occur in cases of primary obstruction of the appendix with result

The tumor removed at operation was found to be a teratoma of the ovary which was undergoing chorionic epitheliomatous changes. The tumors which developed in the lung were secondary to the teratoma of the ovary.

Bruce states that teratomata of the ovaries are rare constituting less than 4 per cent of all ovarian tumors if dermoids are excluded.

The second case reported was that of a woman forty years of age who had been suffering for a year from indigestion and malaise. Following a diagnosis of cholecystitis the patient had been put on a diet but there was no change in the symptoms.

On the day of her admission to the hospital she was seized suddenly with severe pain on the right side of the abdomen. This was followed by collapse with all the classical signs of shock: slight jaundice, board-like rigidity on the right side of the abdomen and an increase in liver dullness.

Immediate laparotomy revealed the presence of considerable blood in the peritoneal cavity. The liver was found to be markedly enlarged and purple. The capsule was tense. On the anterior surface of the liver, immediately below the costal margin, a transverse laceration $3\frac{1}{2}$ in in length was found. This was packed with gauze and the abdomen closed. The patient never rallied from the operation, and died on the third day.

At autopsy the liver was found to be twice its normal size. The capsule was very tense, and the substance of the organ of a rubbery consistency. The spleen was normal.

On section the liver showed many greenish white areas mixed with purplish liver substance.

Microscopic examination showed atrophy of groups of liver lobules which were replaced by fibrous tissue, red blood cells and lymphocytes. A diagnosis of acute hepatitis with early atrophy was made.

The third case was that of a woman thirty nine years of age six and a half months pregnant who while sitting at dinner was suddenly seized with severe pain in the right side and collapsed. A physician found a rapidly increasing tumor in the right iliac region. A pre-operative diagnosis of ruptured uterus was made.

At operation a rupture of the epigastric artery with the formation of a large hematoma posterior to the rectus muscle and anterior to the peritoneum was found. The rectus muscle had been stripped from its posterior sheath over a large area. The stripping process had been carried out into the flank. The artery was ligated, the clot removed and the cavity packed with gauze. The patient made an uneventful recovery.

The fourth case was that of a man forty six years of age who was suddenly taken with pain in the left lower quadrant of the abdomen. During the attack a mass appeared which could be felt on rectal examination.

Proctoscopic examination revealed an ecchymosis of the rectal wall about 3 in up.

Three days later the pulse was rapid and a swelling could be made out in the left iliac, hypogastric and umbilical regions.

At laparotomy, nothing was found in the peritoneal cavity, but a large collection of blood clot was discovered outside the peritoneum. The cavity was packed with gauze. Transfusions were given, but the patient died three days later.

Autopsy disclosed a large collection of clotted blood separating the peritoneum from the parietal wall in front as high as the umbilicus and extending backward and upward to the diaphragm. No evidence of a growth was found.

Subsequently it was learned that on a previous occasion the patient had had difficulty in stopping bleeding. At the time a diagnosis of hemophilia was made.

ALTON OCHSNER, M.D.

Truesdale, P. E. Traumatic Rupture as a Sequence to Congenital Hernia of the Diaphragm with an Experimental Study of Its Mechanism and the Effects of Phrenicotomy. *Ann Surg.* 1919, 70, 654.

Truesdale states that hernia of the diaphragm is more frequent than is generally believed and may be the cause of attacks of dyspnea, cough, cyanosis and gastric distress. He reports such a hernia in a girl five years of age who was struck by an automobile sustaining injuries of the trunk and a fracture of the femur. During the patient's stay in the hospital she developed a paroxysmal cough similar to whooping cough. Later examination revealed dextrocardia. On X-ray examination following a barium enema and a barium meal the stomach and a part of the transverse colon were found in the left thorax. A diagnosis of traumatic rupture and hernia of the left diaphragm was made.

Operation revealed the presence of a congenital opening at the oesophageal ring and a traumatic rent extending to the periphery of the diaphragm. Repair was followed by recovery.

In a study of diaphragmatic hernia made by the author on dogs it was found that after the production of an experimental hernia the stomach and bowel did not enter the thorax at once but were drawn up gradually by inspiration. This finding explains why the child whose case is reported did not die from shock or a sudden change in the position of the mediastinum at the time of the injury.

Experiments with phrenicotomy on dogs demonstrated that the portion of the diaphragm which had been denervated ascended with inspiration in contrast to the normal side which descended. The author calls this alternating motion a paradoxical action.

The article contains a number of roentgenograms demonstrating the transposition of the abdominal and thoracic structures during the development of experimental hernia. Truesdale suggests phrenicotomy as an aid in the repair and healing of diaphragmatic hernia which have been treated surgically.

WILLIAM J. PICKETT, M.D.

GYNECOLOGY

UTERUS

Iracta D and Harguindéguy, E An Inguinal Hernia on the Left Side Containing a Uterus and Adnexa in a Case of Double Uterus (Hernia inguinal izquierda comprendiendo el útero y anexo correspondiente en un caso de útero doble) *Bol Soc de obst y ginec de Buenos Aires* 1929 viii 237

A woman thirty nine years of age came for treatment for dyspareunia. The external genitals were normal but the vagina ended in a cul-de sac 8 cm from the hymen and no internal genital organs could be palpated. In the left inguinal region there was a pear shaped tumor which was slightly increased in size by effort and coughing dull on percussion, and painful on palpation. The patient had never menstruated, but for three days every month the inguinal tumor became larger and painful.

Röntgen examination showed the bones of the pelvis to be normal. A diagnosis of inguinal hernia of the internal genital organs was made. Operation revealed a rudimentary uterus ovary and tube in the hernial sac and a uterus and adnexa free in the abdominal cavity on the right side. The hernia was operated on by Bassini's method.

Up to 1923 seventy eight cases of inguinal hernia containing the internal genitalia were reported in the literature. The author gives brief notes on those reported since that time, including three cases of such hernia in men. In one of the latter the hernia contained a uterus in one Mueller's ducts at the stage of the second month of embryonic life and in one Mueller's ducts at the stage of the third month of embryonic life.

AUDREY G MORGAN M D

Beutner O Plastic Alterations of the Body of the Uterus Associated with Ovarian Tumors (Modifications plastiques du corps utérin en présence de tumeurs ovariennes) *Rev franç de gynec et d obst* 1929 xiv 529

Supplementing the report by Schiffmann on distortions of the body of the uterus resulting from ovarian tumors Beutner describes three additional cases—two of large multilocular ovarian cysts and one of malignant cystadenoma in women from sixty four to sixty six years of age. No microscopic changes were observed in the uterine musculature.

The author is of the opinion that the elongation and flattening of the corpus uteri with occasional hypertrophy of one or the other uterine horn giving the appearance of uterus unicornis is due to traction at the point of insertion of the tubes and pressure exerted by the surrounding tumor mass. He agrees with Schiffmann that these changes are analogous to the elongation and hypertrophy of the cervix in prolapse and believes that advanced age is a predisposing factor.

HAROLD C MACK M D

Fluhmann C F The Endometrium in So Called Idiopathic Uterine Haemorrhage *J Am M Ass* 1929 xciv, 1136

The author reviews the findings in ninety cases of so called idiopathic uterine haemorrhage. Fifty seven of the women were of the child bearing age and thirty three in the pre climacteric or climacteric period. The cases are classified according to the character of the bleeding into the following six groups: (1) those with a regular four week menstrual cycle but in which the flow was prolonged and profuse; (2) those in which the menses occurred at irregular and usually shortened intervals; (3) those with completely irregular and atypical bleeding with no relation to the menstrual cycle; (4) those with continuous bleeding setting in following a normal menstrual cycle; (5) those in which menstruation became progressively more profuse or irregular, ending finally in continuous or atypical irregular bleeding; and (6) those with bleeding following a period of amenorrhoea.

Histological examination of the endometrium showed glandular hyperplasia of the endometrium in forty nine cases, endometrial polypi in three cases, simple hypertrophy of the endometrium in two cases, endometritis in seven cases, atrophy in five cases, and normal endometrium in twenty four cases.

Haemorrhage of the endometrium may be brought about by (1) desquamation; (2) localized necrosis; (3) the rupture of isolated blood vessels; (4) injury to the endometrium following rupture of the deep vessels; and (5) diapedesis.

ALICE F MAXWELL M D

Barris J Chronic Cervicitis (Leucorrhoea) *Brit M J* 1929 ii 638

Strachan G I The Pathology of Chronic Cervicitis *Brit M J* 1929 ii 659

Statham R S The Treatment of Chronic Endocervicitis *Brit M J* 1929 ii 661

BARRIS defines chronic cervicitis as an inflammatory condition of the mucous membrane of the cervical canal and the external uterine os due to infection which is characterized by leucorrhoea and usually but not invariably associated with a cervical ero ion.

The discharge varies greatly in color, consistency, and quantity. As a rule it is of a viscid white mucoid character resembling the white of a raw egg but it may be slightly yellow or green. It is usually most profuse in the morning when the erect attitude is first assumed after recumbency and just before and after menstruation. In cases in which the infection is of gonococcal origin the discharge is more definitely yellow and generally is mucopurulent. When a

ant tension, gangrene and perforation. The rising death rate could be checked if appendicitis were more generally recognized as a type of acute intestinal obstruction demanding immediate operation.

In acute diffuse suppurative peritonitis, drainage is helpful if it relieves tension by releasing purulent exudate. If the tension is due to intestinal distention rather than a peritoneal exudate, an enterostomy or cecostomy will be indicated rather than peritoneal drainage as it not only permits the release of gas, but also acts as an inlet for fluid to combat dehydration.

Multiple pathological lesions are frequent in the abdomen and the surgeon should search for them unless the operation is of an emergency character. In order to avoid missing pathological lesions adequate anesthesia and a generous exposure are essential. It is important to make a record of negative findings for future reference.

In surgery of the abdomen it is often necessary to resort to a two-stage operation in which the first stage is the minimal procedure that will give relief and tide the patient over the crisis and the second stage is the radical treatment of the causal factor. During the interval between the operations the general condition improves and the local condition in the vicinity of the lesion may be restored to normal.

Specific local immunity can be produced by introducing any foreign material bacterial or otherwise into the peritoneal cavity several days prior to the operation or by opening the abdomen and handling of the viscera before the operation. In cases of resection of the colon the administration of two preliminary injections of streptococcus and bacillus coli vaccine prior to operation results in a definite increase in resistance to peritoneal infection.

The Mikulicz Paul two-stage operation and its modifications are valuable methods of treating obstructing growths in the colon especially in feeble patients.

In intestinal obstruction drainage of the obstructed gut will afford some relief yet death may occur even when drainage is free. The replenishment of body fluids to combat dehydration is the first indication in the treatment. Hypertonic salt solution is of special benefit. Fluid in an obstructed bowel is toxic but if the same fluid is introduced into the normal bowel below the obstruction it may be life saving. The physiological lack of intestinal secretion below the obstruction combined with a pathological retention above it is a problem which should receive further study.

CYRIL J. GLASPEL, M.D.

bathes the cervix. The cervix then becomes sodden and sheds still more of its squamous epithelium and very little improvement is produced in the thickening of the broad ligament.

Another most excellent remedial method is the use of hot antiphlogistine tampons. These are formed of a cup shaped lump of antiphlogistine enclosed in a single layer of gauze heated as hot as can be borne pressed and moulded right up against the vaginal vault and left in place for six hours. They require expert insertion but an intelligent nurse can soon learn to apply them.

The practice of putting in a ring pessary to relieve backache cannot be too strongly condemned. A pessary tends to keep up the cervical infection and presses upon the tender fornices and ureters. It is far better to remove a pessary during the treatment even though there is a considerable prolapse.

Very excellent results are obtained also by diathermy with the use of a current which the patient can just endure without discomfort. Diathermy is especially valuable in gonorrhoeal cases.

So far the treatment discussed has been that of cases of fairly recent origin. The author believes that when the condition resists the methods described the treatment is operative. He includes with operative treatment the use of the cautery. When the endocervicitis is complicated by laceration it should be treated surgically because of the relatively great predisposition to carcinoma. The operations fall into three groups—repair, amputation and panhysterectomy. The author believes that in the cases of young patients amputation is not advisable. In some cases it is followed by abortion. If it is performed for hypertrophy it should be of the low type if the patient is young. In the cases of elderly patients especially if there is reason to suspect a uterine complication such as fibroids the operation of election is panhysterectomy. The author prefers the vaginal route with repair of the pelvic floor and perineum.

ALBERT M. VOLLMER, M.D.

Thibaudeau A. A. and Burke E. M. Carcinoma of the Cervix Uteri—An Investigation of the Relation Between the Histological Findings and the Results of Radiation Therapy. *J. Cancer Research* 1929 xiii 260.

In their investigation of the relation between the histological findings in cases of carcinoma of the uterine cervix and the results of radiation therapy the authors studied twenty-eight cases treated by radiation in which there was no evidence of recurrence after more than five years and for comparison a like number of uncured cases. The clinical grouping was as follows: Group 1 malignancy confined to the cervix; Group 2 tumor spread to the adjacent vaginal wall; Group 3 beginning thickening of one or both broad ligaments but uterus movable; Group 4 uterus fixed and Group 5 recurrence after removal of the uterus.

The histological classification was that suggested by Broders depending on the degree of cell differ-

entiation as follows: Group 1 75 to 50 per cent differentiated; 25 to 50 per cent undifferentiated; Group 2, 50 to 25 per cent differentiated, 50 to 75 per cent undifferentiated; Group 3 25 per cent or less differentiated, 75 to 100 per cent undifferentiated. The malignancy index was determined also by the method of Hueper.

The authors conclude that histological grouping and malignancy indices are of limited value in the prognosis in cases of epithelioma of the uterine cervix. Of the twenty-eight cases reviewed in which no recurrence was noted five years or more after radiation 25 per cent belonged in Group 3, 50 per cent in Group 2 and 25 per cent in Group 1.

ROBERT M. GRIEBA, M.D.

Percy J. F. Statistical Report of Cautery Surgery in Uterine Carcinoma. *Surg. Gynec. & Obst.* 1929 xlix 663.

This report is based on 134 cases of cervical carcinoma. The author divides the cases into 2 groups. The first group was made up of 28 private cases treated in the period from 1903 to 1917 and the second group of 23 private cases and 83 institutional cases treated in the period from 1918 to October 1925.

Of the 118 patients in the first group 9 (32 per cent) are alive and well from nine to nineteen years since the treatment. Of the 111 patients in the second group, 11 are alive and well more than three years after the treatment. Accordingly, of the total number of 134 patients 27 (20 per cent) are alive and well from three to nineteen years after the treatment.

Few of the cases were better than borderline cases, and many were advanced and inoperable. Several cases are discussed in detail. The author believes that more relief can be given with the use of the cautery to these otherwise doomed patients than by any other known method.

T. FLOYD BELL, M.D.

ADNEXAL AND PERIUTERINE CONDITIONS

Wharton L. R. and Krock F. H. Primary Carcinoma of the Fallopian Tube. A Series of Fourteen Cases. *Arch. Surg.* 1929 xxx 843.

Wharton and Krock's series of 14 cases of primary carcinoma of the fallopian tube is the largest that has yet been studied in a clinic. The condition is very rare. Only 5 cases were found in about 35,000 gynecological cases in the Johns Hopkins Hospital, Baltimore.

In the series reviewed the chief symptoms were a profuse vaginal discharge which at times was blood tinged, sharp lancinating pain and occasional menstrual disorders. The physical findings were variable. Such conditions as salpingitis and sterility did not seem to have any relation to the condition. The growth was usually situated in the middle or outer third of the tube and arose from the tubal endometrium, giving rise to a mixed type of carcinoma.

vascular erosion is present it may be slightly blood stained following examination of the uterus or coitus. General debility and anemia result from the absorption of toxic substances from the infected cervical canal. Not infrequently, the patient complains of pruritus vulvæ due to the vaginal discharge. The condition may result in sterility. Disorders of menstruation and backache do not occur unless the infection involves also the endometrium or the uterine appendages. Chronic cervicitis if itself does not cause irregular uterine hæmorrhage or pain. The cervix has been described as the tonsil of the pelvis and may act as a focus of infection. It is known that puerperal pyosalpinx and peritonitis may occur in patients suffering from chronic cervicitis of gonococcal and streptococcal origin. Cervical trauma and cervical erosion may be associated with malignant disease.

STATHAM states that the essential lesion in cervicitis is irritation produced usually by chronic pyogenic infection after laceration of the cervix at childbirth. The cervix is patulous, lacerated and bruised. With the vagina, it is bathed in alkaline lochia instead of the normal acid secretion, its normal resistance to infection being thereby definitely impaired.

The organisms most commonly found in these cases are the staphylococcus, streptococcus, and bacillus coli communis, but in some cases the gonococcus is responsible for the condition. In nulpis, the gonococcus is the most common organism and exercises its well known ability to penetrate and infect an intact mucous surface.

Cervicitis is characterized by oedema of the subepithelial stroma with an outpouring of lymphocytes and plasma cells especially around the blood vessels and the glands and under the surface epithelium. The blood vessels dilate the surface columnar and glandular epithelium becomes irritated so that glandular hypertrophy and distention occur, and the cervical secretion becomes increased in amount and of a mucopurulent appearance from the admixture of inflammatory products. The increased inflammatory cervical secretion is known as leucorrhœa. It always retains its thick viscid character. Leucorrhœa is almost always a sign of cervical infection. Partly as the result of maceration by the continual leucorrhœal discharge, partly as the result of being raised and devitalized by subepithelial oedema and partly as the result of trauma, a plaque of squamous epithelium surrounding the external os becomes separated and cast off in the discharge, a raw surface of varying extent being left wholly or partly surrounding the external os. The columnar epithelium from the cervical canal, being more resistant, is seldom affected in this manner; on the contrary it is usually stimulated to grow outward and cover over the raw surface so that after a time the area around the external os becomes covered by columnar epithelium which carries with it in its outgrowth cervical racemose glands. To this area, which in appearance resembles a red raspberry, the name 'cervical erosion'

is given. The erosion is not an ulcer and not a granulating patch; it is an epithelium covered surface although there is often a breach of continuity between the two types of epithelium at the periphery. Extension of glandular tissue on the portio is found also in the 'congenital erosion', but in this condition is usually regarded as the persistence of a fetal condition.

STATHAM states that if the presence of the gonococcus can be demonstrated there is no treatment so good as daily douching with boric acid and removal of the mucus by wiping and thorough swabbing of the cervix and vaginal vault with a 1 per cent mercurochrome. Strong solutions delay the normal process of healing that is the replacement of the columnar celled erosion by the normal squamous celled covering of the vaginal surface of the cervix. In all cases of recent infection with much mucopurulent discharge—even those which are not gonorrhœal—he finds mercurochrome most excellent. This may be used alternately with a 1:1000 flavine solution. Statham employs this treatment in all fairly recent infections of the cervix which are not complicated by erosion or extensive laceration. In cases in which the cervical canal is obviously infected fairly high up, a Playfair probe can be employed to carry the solution as high as the internal os. Probably the next most useful remedy is 10 per cent silver nitrate applied in a similar manner.

When the cervical infection is accompanied by laceration, complaint is often made of backache and a dull pain in the groins. In such cases the base of the broad ligaments will be found thickened and tender on one or both sides, and the ureters are often palpable and tender. The condition causes frequency of micturition and usually is associated with a quite marked bacilluria. The mild cellulitis with its consequent fibrosis and contraction may cause far more discomfort than the laceration and infection. The author has found that hot and prolonged douching is by far the most effective remedy. The douche is given as hot as it can be borne and is continued for at least fifteen minutes. The patient lies in a warm bath and a large douche can be hung on a convenient ly placed stand. The douche nozzle is inserted to the top of the vagina and the can replenished from the hot tap as often as desired. The presence of the warm water in the bath prevents a too rapid outflow. If there is much pus the patient is told to give herself a short fystol douche in the usual way before getting into the bath. The relief obtained from this treatment is immediate and usually becomes permanent after a short time. If the symptoms still persist the author explores the ureters for strictures.

Glycerin or glycérin and ichthyl tampons are of use only when applied by an expert nurse or the medical attendant; otherwise they are harmful. The patient never manages to get them right up to the vaginal vault. Unless the tampons are correctly introduced a gap is left between the cervix and the tampon and on account of the hygroscopic action of the glycerin, a pool of mucopurulent fluid forms and

As the delayed character of the menstrual periods, their paucity, and the associated sterility and reduction in fertility are expressions of ovarian hypofunction it follows that treatment must be directed toward increasing or improving ovarian function. The first requisite is improvement of the patient's nutrition and her general hygienic and psychic conditions in other words, general constitutional improvement. Thyroid treatment when the basal metabolic rate is deficient and the administration of ovarian extracts of proved potency, pituitary extracts and emmenagogues are auxiliary measures. While an ovarian extract containing a specific hormone in sufficient quantity to make up the deficiency in any given case has not been elaborated to date the future holds out a fair promise for success.

A more definitely proved and more efficacious physical agent is the X-ray. Small doses of the roentgen rays applied first to the hypophysis and then if necessary, to the ovaries have proved successful not only in restoring the menstrual periodicity to more nearly the normal in from 80 to 90 per cent of the cases but also in increasing fertility to at least 50 per cent.

The damage of the germ plasma which is supposed to result from roentgen irradiation has not been proved. Nevertheless it appears highly desirable to supplant this treatment by the use of a specific endocrine product with a potency comparable to that for example of insulin. Recent findings indicate that a combination of ovarian extract with pituitary extract may meet the requirements. The hormones need not necessarily be isolated from the ovaries or hypophysis themselves, but may be obtained more conveniently and in adequate quantities from excretions and secretions in which they have already been found in abundance and from the placenta.

E. L. CORNELL M.D.

King E. S. J. The Association of Endometriosis with Neoplasms of the Ovary. *Surg. Gynec. & Obst.* 1929 xlix 433.

The association of endometriosis with neoplasms of the ovary suggests that the stimulus responsible for aberrant endometrial growth may be due to a hormone formed in the ovary.

King reports three cases of ovarian neoplasm associated with either local hyperplasia or proliferation of endometrial tissue in abnormal situations.

Attention is called to the fact that there is an extremely close relationship between the ovary and the endometrium during menstruation and pregnancy. The decidual cells occur not only in the endometrium but also among other places, in the peritoneum fallopian tubes and bowel. This distribution is very similar to that of endometriosis and suggests a common factor.

In two of the cases reported by the author the neoplasms were granulosa cell tumors. In one the tumor arose in a luteal cyst. King therefore suggests that the cells may function similarly to those of the corpus luteum or granulosa cells and produce a

follicular hormone which may be abnormal in amount or quality and produce an overgrowth of endometrium.

T. FLOYD BELL, M.D.

Smith G. Van S. Proliferative Ovarian Tumors. A Clinical and Pathological Study of 435 Cases Treated between 1875 and 1928 at the Clinic of the Free Hospital for Women. *Am. J. Obst. & Gynec.* 1929, xviii 666.

With the exception of the dermoids, the origin of the proliferative ovarian tumors seems to be associated with a lack of ovarian function, abnormal ovarian function and ovarian involution. In some cases the prolonged irritative effect of the contents of certain benign cysts may be the stimulus to malignant change. In other cases malignancy results from a change in the methods of metabolism and growth of the cells brought about by hyalimination and calcification or necrosis due to a decrease in the blood supply of the ovary or tumor caused by pressure or torsion.

No undiagnosed abdominal tumor should ever be tapped for if it is malignant tapping will reduce the possibility of cure to almost nothing.

Every effort should be made to remove an ovarian tumor intact without spilling any of its contents into the peritoneal cavity. Immediately upon its removal the tumor should be examined grossly and microscopically. If it is a dermoid, benign pseudomucinous cystadenoma, or fibroma, and there is no other pathological condition conservative operation is indicated. If it is a benign papillary serous cystadenoma and the other ovary appears normal, the indication for conservative operation in the absence of other pathological conditions will depend on the patient's age and desire for pregnancy. If the other ovary is left, the patient should be watched for years. If the tumor is malignant, radical operation should not be deferred, even when the other ovary appears normal. In every case, the vagina, cervix and uterine cavity should be examined to rule out possible associated pathological lesions.

Spontaneous regression of a microscopically malignant ovarian tumor did not occur in any of the cases studied by the author.

To operative irradiation in three cases of malignant tumor did not apparently affect the outcome.

In a few cases the microscopic grade of malignancy is of some value in the prognosis.

E. L. CORNELL M.D.

EXTERNAL GENITALIA

Taussig F. J. Leucoplakic Vulvitis and Cancer of the Vulva (Etiology Histopathology Treatment Five Year Results). *Am. J. Obst. & Gynec.* 1929 xviii 472.

Leucoplakic vulvitis appears usually soon after the menopause. It may involve the entire vulva or appear in symmetrical or irregular patches. In over one half of the cases there is obliteration of the labial and preputial folds known as kraurosis. Pruritus

(papillary alveolar and solid carcinoma) In some cases it extended along the tubal mucosa with implants reaching the peritoneum and uterine cavity, but in those in which the tubal ends were occluded it was confined to the tube, producing a tumor mass and metastasizing by way of the lymphatics and blood stream

The treatment is radical surgical removal in the early stages

According to the results of the past the prognosis is almost hopeless In the cases which are reviewed by the authors the longest period of survival after operation was five years

ABRAHAM A BRAUER M D

Janney J C The Blood Test for Ovarian Hormone *Am J Obst & Gynec* 1929 xviii 807

In a series of tests made on the blood of women following childbirth the estrus producing substance was found to disappear from the circulating blood rapidly after delivery

In a series of tests performed by the same method on pregnant women the incidence of positive tests increased with the duration of the pregnancy until it reached 95 per cent in the tenth lunar month

E L CORNELL M D

Neumann H D Histological Studies on the Problem of the Sympathicotrophic Cells (L Berger) or Hilus Cells of the Ovary (Histologische Studien zur Frage der sympathicotropen Zellen (L Berger) bzw der Hiluszellen des Ovariums) *Arch f Gynaek* 1929 cxxxi 530

Following a review of the investigations which have been previously published in the literature Neumann reports his own findings in detail

Neumann studied two pairs of ovaries from fetuses 36 and 42 cm long eleven pairs from newborn infants, nineteen pairs from adult women fifteen of whom were in the child bearing age five of whom were pregnant two of whom were in the climacteric and two of whom were sixty and sixty nine years of age

Only a small part of the ovaries was fixed in Wiesels chromate solution Some of the ovaries received preliminary treatment with osmic acid With regard to each finding the method of fixation and the special stain used are stated Numerous photomicrographs and colored drawings supplement the text

In the hilus region of the ovary peculiar cells in very close relation to the hilus nerves were found These were not a chance finding to be ascribed to cell dislocation in the ovary The cells belong rather to the normal histological elements of the ovarian hilus They are always sex specific cell elements and have no relation to heterosexual formations They are present at birth, but disappear almost completely during childhood to re-appear at puberty The only examples of this group in Neumann's own material were found in the case of a girl one and a half years old

In pregnancy there is a distinct increase in the number of these cells It is evident that they do not undergo complete involution following delivery as they are more numerous in multiparae than in nulliparae With increasing age there occurs a retrogression of these cells and the formation within them of a pigment—an atrophy pigment Their peculiar behavior during pregnancy requires further study The question as to how these cells behave during the menstrual cycle is also suggested for future investigation

The nature of these cells cannot yet be stated with certainty Von Winwarter and Wallart consider them paraganglion cells Berger and Kohls refer to them as sympathicotrophic or Levidig interstitial cells Neumann agrees with von Winwarter and Wallart that they are a special form of paraganglion cell

As the material obtained at operation often no longer exhibits the chromaffin substance comparative anatomical studies must be made in the future It will be only when we have acquired a more extensive anatomical knowledge of these cell elements that their rôle in the female organism can be elucidated

A. IFFER (G)

Rubin J C Ovarian Hypofunction Habitually Delayed and Scanty Menstruation in Relation to Sterility and Lowered Fertility *Am J Obst & Gynec* 1929 xviii 603

The material upon which this article is based consisted of 1,044 consecutive gynecological cases treated at the Mt Sinai Hospital New York 4,642 private gynecological cases 2,200 private cases of sterility and 600 private obstetrical cases

It was found that the menses are habitually delayed or scanty in from 3.5 to 8 per cent of gynecological patients and in about 10 per cent of women whose marriage is sterile Women with delayed or scanty menstruation are more apt to be sterile than normally menstruating women the incidence of primary sterility in the former varying between 30 and 70 per cent and the incidence of total sterility including secondary sterility being in some groups as high as 93 per cent

The longer the periods of delay the greater the incidence of sterility Women with periods of delay under a month have a five to eight times better chance of conceiving than those whose periods are habitually delayed for from four to six months On the other hand women who menstruate normally have at least a twelve times better chance of conceiving than those whose menses are habitually delayed for a month and a many times better chance of conceiving than those whose menses are habitually delayed for periods longer than a month

Not only is the incidence of both primary and secondary sterility greater in women with hypomenorrhea and opsomenorrhea but the total fertility of such women is considerably diminished in proportion to the reduction in the number of menstrual periods per year

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

O Farrell M Z. Extra Uterine Tubo Abdominal Twin Pregnancy (Embarazo gemelar extrauterino tubo abdominal) *Bol Soc de obst y ginec de Buenos Aires* 1929 viii 261

In the case reported by O Farrell the course of the pregnancy was normal up to the second month. At the end of that time the patient began to have intense pain in the right iliac fossa, which increased up to the fifth month when fetal movements began. At the beginning of the sixth month the distention of the abdomen was out of proportion to the period of the pregnancy. In the eighth month the fetal movements stopped, and fifteen days later there was slight menorrhagia. At the end of the ninth month vomiting, loss of weight, fever, and a rapid pulse began.

Genital examination showed the uterus to be small and the pole of the fetus to be in the right iliac fossa. At operation two macerated fetuses were found. The patient died the next day. Macroscopic examination of the specimen showed it to be a tubo-abdominal pregnancy. AUDREY G. MORGAN, M.D.

Hirst J C. The Kidney of Pregnancy. *Am J Obst & Gynec* 1929 xviii 528

In the cases of ninety seven obstetrical patients subjected to cystoscopic and pyelographic examination, ureteral obstruction occurred in only four. In two instances it was due to calculus in one case to congenital narrowing of the orifice, and in one case to stricture. The infrequency of ureteral obstruction suggests that some additional factor is responsible for impairment of drainage not accounted for by atonic ureteral dilatation or the latent infection so common in pregnancy. Hirst believes that this impairment is due to intermittent vasodilatation or chronic passive congestion of and around the distal ureter, evidenced by edema of the orifice.

Jaundice did not occur in any of the cases reviewed, but in one instance a subacute exacerbation of a chronic cholecystitis followed ureteral catheterization. Therefore it appears that even if the renalopatic interrelation is of importance in infection and toxemia, it plays no great part in careful cystoscopic examination of the obstetrical patient.

In two cases the urological examination was followed by aggravation of a chronic pyelitis and in one case by precipitation of labor at term.

The administration of heparin appears to reduce the blood pressure but practically only during treatment. It must be supplemented by other measures. It caused headache in many cases, convulsions in one case, and a very sharp reaction in one case. Very favorable improvement after discontinuance of injections was noted in four cases.

The author draws the following conclusions:

1. Cystoscopic urological diagnosis is an important part of obstetrical service and when carefully performed carries no undue risk.

2. Vasodilatation and circulatory stasis of the distal ureter may be concerned directly or indirectly with late gestational toxemia.

3. Early and late toxemia are essentially different; the latter is primarily of renal origin.

4. Heparin appears to bear sufficient specific action to separate a hepatic type from the late forms of pregnancy toxemias. E. L. CORNELL, M.D.

Middleton D S. Ureteral Dilatation of Pregnancy Its Complications and Sequelae. *Edinburgh M J* 1929 xxxvi 103

The average frequency of ureteral dilatation as given in various reports is 40 per cent. The right ureter is dilated more frequently than the left. The condition begins and progresses during the last six months of pregnancy. It has been ascribed to pressure on the ureter between the pelvis and the heavy uterus, ureteral paralysis, and the specific inhibitory action of bile salts on the musculature. The author agrees with Hofbauer that there is a hypertrophy of the connective tissue sheath about the ureter with a definite new formation of muscle fibers and connective tissue that the same forces which have been acting on the uterine musculature throughout the pregnancy, namely muscular hyperplasia combined with diminished contractility, affect also the ureters. A ureteral stricture may be formed after repeated pregnancies because of the fibrosis resulting from the succeeding periods of hyperplasia.

Acute pyelonephritis of pregnancy is very common and usually occurs on the right side. It is always associated with ureteral dilatation and very often with colonic stasis. Therefore the sequence of events begins with the absorption of colon bacilli from the proximal colon and ends with infection of a vulnerable dilated ureter during the excretion of the organisms by way of the renal tract.

The majority of cases of pyelitis respond to simple measures such as the free use of fluids, which produces a freer interchange of fluids in the ureteral residual urine, the administration of potassium citrate and elevation of the foot of the bed to decrease the pressure exerted on the lower ureter by the lower pole of the uterus. In cases which do not respond to these measures the introduction of a ureteral catheter into the dilated ureter may be followed by subsidence of the infection. High lavage of the colon, the source of the infection, is also indicated.

Hematuria of pregnancy is due most probably to ureteral dilatation with a mechanical disturbance in

of long standing is the most pronounced symptom. In negroes, the disease is very rare. In over one half of the cases it leads to the development of carcinoma.

Clinical and histological studies tend to confirm the view that the underlying cause of leucoplakic vulvitis is loss of elasticity in the skin due in part to deficiency of ovarian hormones. This defect in the elastic structure leads to increased friability with resulting cracks and abrasions through which bacteria enter the tissues and cause pruritus. Scratching then increases the infection by providing new ports of entry for bacteria. The chronic vulvitis thus produced leads first to hyperplasia (keratinosis, acanthosis) and later to atrophy (sclerosis, collagen formation, kraurosis).

The treatment indicated in leucoplakic vulvitis is excision of the affected vulval skin. The five year results after such a vulvectomy are uniformly favorable and justify the discomforts attendant upon the operation. The discomforts have been greatly reduced by two modifications in the technique—the use of a vaginal flap over the perineum and the preservation of a double anal bridge in cases of perianal involvement.

Cancer of the vulva is not a pathological entity. There are four well defined types: (1) epidermal cancer springing from the labial, preputial or perineal skin and associated almost always with leucoplakic vulvitis; (2) cancer of the clitoris, a very rare

and malignant form; (3) vestibular cancer arising from the vaginal introitus and usually springing from old syphilitic ulcers in relatively young persons; and (4) cancer arising in Bartholin's gland, which is rare and usually follows chronic bartholinitis.

The author reviews seventy six cases of cancer of the vulva, about 60 per cent of which were operable. Classification of these cases according to the histological malignancy index showed that the index corresponded closely to the extent of the clinical involvement and that the cancers arising on a leucoplakic basis were relatively benign, whereas those springing from syphilitic ulcers were very malignant.

Treatment of cancer of the vulva by radiotherapy has been very unsuccessful. Burns occur readily and retrogressions are few and temporary. Surgery alone is to be considered unless the patient's condition makes it impossible. Simple vulvectomies and superficial or one-sided gland dissections are frequently followed by recurrence. The bilateral Basset technique of gland removal together with vulvectomy is a safe operation followed by a high incidence of five year cures. In the cases reviewed it resulted in a five-year cure in 81.8 per cent. In two of the cured cases there was gland metastasis. In every case of leucoplakia the vulvectomy must be complete as a new cancer may arise years later from a remaining island of leucoplakic skin.

E. L. CORNELL, M.D.

carriages than other factors in contrast to the figures of Seitz, who assumed that syphilis was the cause in 10 per cent of his cases of habitual abortion. As regards premature birth, his statistics indicate that syphilis is the cause of from two to six times as many premature births as other factors which favor premature delivery. In all cases of premature birth of a dead or macerated fetus the fetus is syphilitic. When the prematurely born fetus of a syphilitic mother survives two weeks the syphilis in the mother is usually latent.

As regards birth at term, the author concludes that the child of a syphilitic mother is born alive and free from symptoms of syphilis in only from 6 to 7 per cent more than half of the cases. Of the women with manifest syphilis who were not treated only one third gave birth to infants which survived two weeks and of these infants one third showed syphilitic manifestations. Syphilis prolongs the period of labor and the puerperium and causes more complications during these periods than occur in non syphilitics.

The transmission of the syphilitic infection to the fetus may occur in three ways:

- 1 The fertilized ovum becomes embedded in the syphilitic decidua, where the trophoblast immediately becomes infected, or it becomes implanted in a normal endometrium and the placenta becomes infected later.

- 2 The infection occurs at the time of separation of the placenta, during the tearing of the villi.

- 3 The infection occurs percutaneously during labor, the virus being transferred from the primary lesion in the mother's genital tract to the skin of the fetus.

The first type of infection, which is the most frequent, may result in abortion, premature birth, or the birth at term of a dead and possibly macerated fetus. If the child is born alive it shows the manifest symptoms or the secondary or tertiary symptoms of syphilis.

In the second type of infection, which is considerably less common, the child is born alive and apparently normal but after a shorter or longer period of incubation, develops the secondary manifestations of syphilis.

In the third type of infection a living child is born which develops a typical primary lesion at the site of inoculation after the usual period of incubation.

For the diagnosis of syphilis during pregnancy and labor the author recommends besides a consideration of the history and the findings of clinical examination a Wassermann test on blood drawn from the arm vein. When it is difficult to obtain blood from the arm, blood obtained from the umbilical cord during labor may be used. The Wassermann test should be repeated after the puerperium. As a control of the Wassermann test the Meinicke test is of value during pregnancy and the Sachs-Georgi test during the puerperium.

The diagnosis of syphilis in the newborn is more difficult, but may be made from a strongly positive

Wassermann reaction in the mother during the first week of the puerperium or from the demonstration of the spirochetes in the secretions and excretions of the newborn or in the internal organs of the dead fetus by Levaditi's staining method.

Serological tests have shown that the incidence of syphilis in pregnant women is 10 per cent.

The treatment of syphilis during pregnancy and labor attempts to maintain the normal course of pregnancy and prevent infection of the fetus. Prophylaxis is very important. Syphilitics should be given permission to marry only when, following three or four courses of specific treatment, three examinations at intervals of four months have proved them serologically and clinically negative. During pregnancy, the syphilitic mother should receive another course of specific therapy. The author recommends the combined neosalvarsan and mercury treatment but states that the latter may be replaced advantageously by bismuth preparations. When the infant is syphilitic it should always be nursed by the mother. When it seems to be free from syphilis, neither the syphilitic mother nor a normal nurse should nurse it; it should be fed with milk pumped from the breast or by artificial feeding.

The treatment of infants born of syphilitic mothers should be begun immediately after birth even if they are free from symptoms. When this is done the prognosis as to life and cure is much better. The most advantageous treatment is the administration of bismuth preparations (0.3 to 1 c m). The combined therapy (neosalvarsan and mercury) may also be begun by bismuth treatment in order to prevent the life threatening loss of weight which results from the sudden liberation of endotoxins by massive treatment. The treatment should be continued for at least two years, an average of two courses each of three months' duration being given yearly. At the end of that time the condition of the child and the Wassermann reaction should determine the management of the case.

SILBICER (C)

LABOR AND ITS COMPLICATIONS

Essen Møller E. The Labor of Primiparae Past Forty Years of Age. *Acta obst et gynec Scand* 1929 VIII 103

The author reviews the labors of 206 primiparae forty years of age or older. Two of the women died, one from sepsis after labor lasting for one hundred and sixty seven hours with a sacral presentation and the other from acute exsanguination after spontaneous labor with placenta prævia. Both could have been saved if intervention had been done in time.

Seventeen of the infants died before, during or after the labor, the infant mortality being therefore 8.25 per cent. Some of these children could probably have been saved by earlier intervention.

Essen Møller is of the opinion that primiparae over forty years of age are exposed to greater danger at labor than other women. While he does not approve of the routine performance of cesarean section

the renal circulation consequent upon a rise in the intrapelvic pressure secondary to a rise in the intra-ureteral pressure. It usually occurs in multiparae in whom each succeeding pregnancy has caused more permanent ureteral dilatation. It is therefore commonly associated with a stricture of the ureter. As infection is present in only about half of the cases it cannot be held responsible for the condition. Catheterization of the renal and ureteral residual urine usually stops the hemorrhage, but it may recur later in the pregnancy.

The close association between ureteral stricture and multiparity is demonstrated by the following observations:

1. A resemblance between the ureterographic appearance in the simple ureteral dilatation of pregnancy and stricture of the ureter.

2. The frequency with which stricture affects the right ureter of multiparous women as compared with nulliparae and men.

3. The fact that multiparae suffering from ureteral stricture have suffered from severe loin pain or hematuria during one or more of their pregnancies and date the onset of their trouble from their last pregnancy.

4. The fact that of eighteen cases, only eight showed any trace of infection.

The symptoms of stricture of the ureter in multiparae are hematuria of pregnancy and pain in the renal region usually on the right side which has been intensified by each succeeding pregnancy.

ROBERT M. GREER, M.D.

Schwarz, O. H. and Dieckmann, W. J. Important Procedures in the Conservative Treatment of Eclampsia. *Am J Obst & Gynec* 1929 XLIII 515

In the treatment of eclampsia advocated by the authors magnesium sulphate in 25 per cent solution is given intramuscularly to control the convulsions. Ten cubic centimeters are administered on the patient's admission to the hospital and 5 c.c.m. after each convulsion until the convulsions are controlled. The average amount over a period of five years has been 19 c.c.m. The maximal amount, 50 c.c.m. was given in only one case. In coma magnesium sulphate is not used. The success of the small dose in controlling the convulsions and preventing their recurrence is attributed to the intravenous administration of glucose.

Believing that absorption from the alimentary canal is an important factor in eclampsia the authors give a colonic irrigation and in addition usually wash out the stomach and leave 60 c.c.m. of a saturated solution of magnesium sulphate in it.

The next and most important procedure is the intravenous injection of 1,000 c.c.m. of a 20 per cent glucose solution over a period of from thirty to fifty minutes, two, three or four times daily, depending on the severity of the condition.

Usually, after twenty-four hours the stomach will empty itself. This is evidenced by inability to recover the injected solution. The authors then inject

5 per cent Karo syrup water, beginning with 50 c.c.m. and increasing the quantity hourly up to the patient's tolerance which may be as much as 300 c.c.m. per hour. This treatment is continued until the patient is conscious and able to take the eclampsia diet of fruit and fruit juices.

After delivery or death of the fetus marked blood dilution and diuresis occurs. Clinical improvement is closely associated with these phenomena. The eclamptic woman has an increased tolerance for glucose, probably due to the retention of chlorides which occurs in pregnancy. The intravenous injection of large amounts of glucose solution will stimulate, temporarily at least, the effect produced by delivery. In severe eclampsia the prognosis is favored chiefly by delivery or early death of the fetus. E. L. CORNELL, M.D.

López R. E. Parathyroid Extract Collip in Eclampsia and Allied Conditions. Report of Cases. *Surg Gynec & Obst* 1929 XLIX 689

López reports a series of four cases of eclampsia *parturientum* in which he found parathyroid extract (Collip) very beneficial. A diuresis was usually initiated on the second or third day after the injection and increased daily for four or five days until the edema disappeared. In two cases a fall in the blood pressure of 40 points occurred. The dizziness, headache, disturbances of vision and muscular cramps improved readily. In two cases the convulsions ceased soon after the injection. In no case did the injection start labor pains but in one case in which the pains were already present it stopped them and they did not recur while the treatment was continued. There was no change in the fetal heart tones. The calcium in the blood did not increase after the use of the extract. The dosage ranged from 10 to 80 units. ABRAHAM A. BRAUER, M.D.

Sciplades, E. Pregnancy Complicated by Syphilis (Komplikation der Schwangerschaft mit Syphilis). *Acta Univ. Sci. Hungar. Elisabeth* 1929 VI 293

The author discusses pregnancy complicated by syphilis on the basis of a very large number of cases seen in the clinic which is under his direction. The article contains numerous tables of statistics on different aspects of the condition.

The statement of Seitz that syphilis plays no etiological rôle in spontaneous abortion occurring in the first four months of pregnancy was only partially substantiated by the author's material. Of the women with a positive Wassermann reaction 53.3 per cent had aborted spontaneously by the end of the fourth month whereas of those with a negative Wassermann reaction 63.2 per cent had aborted spontaneously by the end of that time. On the other hand those with latent syphilis had 53.3 per cent more miscarriages than those with manifest syphilis.

In the later months of pregnancy syphilis became more important as a cause of abortion. In the cases of women with habitual abortion syphilis was responsible for only from 2 to 3 per cent more mis-

External version is being more and more advocated but there are numerous cases in which it cannot or should not be done.

The chief source of danger in breech delivery is the undilated cervix. In the cases reviewed by the authors, 82 per cent of the primiparae and 40 per cent of the multiparae had trouble on account of non dilatation of the cervix. A hands off policy until the cervix is completely dilated should be the rule but there are many cases in which the cervix will not dilate even after prolonged labor. This is apt to be true especially in cases of contracted pelvis. In the cases reviewed by the authors, 60 per cent of the primiparae and 32 per cent of the multiparae whose labors were complicated by failure of the cervix to dilate had a contracted pelvis. Manual dilatation of the cervix is most unsatisfactory often resulting in serious tears and paralysis. In many cases cutting of the anterior lip of the cervix should be done.

Prolapse of the cord was found in 12 of the 456 cases cited. In 8 of these stillbirth resulted.

Many obstetricians have advised routine interference with the second stage under deep anesthesia. This policy was followed by the authors as a matter of routine for a short time but the mortality increased so greatly because of misjudgment of the cervix and various other complications which arose in cases managed by less experienced operators that it was abandoned for the more conservative hands off policy. The mortality then showed a marked reduction.

In view of the high infant mortality, the prolongation of labor which is frequently necessary to effect delivery safely, and the serious complications which often develop it is not surprising that cesarean section is being performed more and more frequently in cases of breech presentation. Some of the still born infants could have been saved by cesarean section but the frequent use of the operation will undoubtedly increase the maternal mortality and in the vast majority of cases cesarean section is unnecessary. It is indicated however in the cases of elderly primiparae if difficulty with delivery is foreseen. In cases of contracted pelvis it should be considered not only on account of the unmoulded aftercoming head but also on account of the difficulty in dilating the cervix.

BRUCESS in discussing this report stated that according to the statistics of 9 000 deliveries in cases of contracted pelvis since 1924 the operation of version and extraction is being performed in such cases much less frequently today than when it has been attempted the infantile mortality has increased and that elective cesarean section has proved the operation of choice.

LEVENFEST analyzed a consecutive series of 518 private cases in all of which proper prenatal care was given. He made 11 successful external versions in recognized breech presentations with the loss of 1 baby and in the same series had 11 breech labors with 3 fetal deaths. As the 1 death after successful

external version was caused by unavoidable craniotomy it cannot be counted against external version. Among the 3 babies lost after breech labor there was 1 with enormous cystic degeneration of the kidneys. The death of this infant therefore should not be counted against breech labor. One of the 2 other infant deaths after breech labor occurred in the case of an elderly primipara with a typical, long labor. The baby died during birth. The second occurred in the case of a woman with a slightly funnel shaped pelvis. In this patient's second pregnancy a breech presentation was recognized, external version was done and the baby delivered alive. In her third pregnancy the breech presentation was overlooked and the baby was lost.

MATTHEWS stated that in his opinion most babies are lost on account of too much hurry in delivering the breech and after coming head. At the Methodist Episcopal Hospital Brooklyn, during the past two and a half years there were 192 breech presentations and 2 versions making a total of 214 breech deliveries. The incidence of stillbirth was 12.1 per cent. In the 44 breech presentations at the Long Island College Hospital Brooklyn, during the past year the incidence of stillbirth was 15.2 per cent.

POLAK said that after the cervix is fully dilated and the breech has presented and is out of the vulva the obstetrician should not pull but should merely guide.

DELEE stated that in 6,031 births at the Chicago Lying In Hospital in 1926 and 1927, breech presentations occurred in 50 (4.1 per cent). The reason for the high incidence is that this hospital receives a large number of referred cases of breech delivery. In the 250 cases breech extraction was performed 166 times and cesarean section 43 times. In the remaining 41 cases the labor was spontaneous or manual aid was necessary. One hundred and forty seven of the women were multiparae. There were 24 fetal deaths. Fourteen of the babies were still born and 10 died later. When the babies which were dead at the time of the mother's admission to the hospital the monstrosities the syphilitics those with intestinal obstruction and the eclamptics are deducted the corrected mortality in the 250 cases was 5.6 per cent.

KING recommended external version in cases of breech presentation. He believes that assistance should be given only when it is necessary.

E. L. CORNELL, M.D.

Moir D. C. The Mechanics of Internal Rotation of the Fetus. *Edinburgh J. J.* 1929 XXXVI 211.

Moir presents an extensive survey of the literature and discusses the various theories concerning the mechanism of internal rotation of the fetus. His own theory is based on mechanical forces. From his investigations he concludes that in the process of moulding the fetal head becomes a bluntly pointed cylindrical structure, that when the moulded head is fully flexed the long axis is very nearly parallel with and is continuous with the long axis of the body and

on such primiparae as has been proposed by others he believes that this operation should be done more often when careful consideration of the conditions in the particular case indicates that the dangers to the child may be decreased in this way without subjecting the mother to greater risk.

Frey E. The Significance of Labor Pains in the Physiology and Pathology of Labor in Premature Rupture of the Membranes (Die Bedeutung der Wehentafel fuer die Physiologie und Pathologie der Geburt beim vorzeitigem Blasensprung) *Schweiz med Wochenschr* 1929 1 613

The author has made extensive investigations regarding the significance of premature rupture of the membranes and has arrived at some entirely new conclusions.

By 'premature rupture' is meant rupture occurring before the onset of labor pains. The demonstration of an alkaline reaction of the vaginal contents is an uncertain criterion. In over 3,000 deliveries in the Obstetrical Clinic at Zurich premature rupture of the membranes occurred about one third times more often in primiparae than in multiparae and was more frequent when coitus had been practiced in the last month of pregnancy. In cases of narrow pelvis it is from one third to one fourth times more frequent in both multiparae and primiparae. Prolapse of the cord is more common in cases of premature rupture of the membranes. The author found the incidence of prolapse of the cord to be 7.24 per cent in cases of premature rupture of the membranes and only 3.98 per cent in those in which the membranes ruptured at the normal time. Prolapse of the cord necessitates operative intervention and operation in the presence of premature rupture of the membranes is followed more frequently by fever in the puerperium.

The author points out that up to the present time the total number of pains at a particular labor has never been recorded. He found that in multiparae the first stage of labor is completed by one third and the second stage by two thirds the number of pains occurring in primiparae. He found also contrary to the previous belief that the first stage of labor in primiparae as well as in multiparae is one third shorter and has fewer pains following premature rupture of the membranes than the first stage with a similar presentation and normal rupture of the membranes. However this observation should not encourage artificial premature rupture of the membranes because in the spontaneously occurring premature rupture the hormonal inhibition is deficient because the pregnancy has reached its biological termination and because of a certain reflex of a psychic character based on the sympathetico-adrenal system. In artificial rupture of the membranes these factors are absent. Therefore artificial rupture of the membranes during the period of cervical dilatation should be avoided.

By means of tables the author shows that in 40 per cent of primiparae and 70 per cent of multiparae

the first stage of labor was completed with 50 labor pains and in 93.5 per cent of primiparae and 99 per cent of multiparae it was completed, at the very most with 150 pains. In the others up to 200 pains were necessary. Therefore when the primary vaginal findings are not known and the first stage of labor is not completed after 200 labor pains following rupture of the membranes spontaneous dilatation of the cervix is not to be expected and the birth of a live child is improbable since in the presence of dilatation the size of the palm of the hand, manual reposition of the incarcerated cervical lips is impossible. In cases in which the size of the cervical dilatation after rupture of the membranes is known it is necessary to wait only for 100 labor pains. If the cervix remains unchanged during this time spontaneous dilatation is impossible and there is danger of injury from severe pressure. Expectant treatment therefore should be abandoned if the cervix has not dilated to the size of the palm of the hand and if it is impossible to replace the compressed lip of the cervix. The author designates this as the syndrome of fixation, formulated from the number of labor pains. He therefore believes that in such cases it is no longer necessary to await the syndrome of incarceration of the isthmus after premature rupture of the membranes; namely, a bloody transudate in the amnion and pressure edema of the cervix. It is necessary only to count the labor pains. When the amnion is intact incarceration of the cervix never occurs.

In recent obstetrics, operative aid has not been insufficient but sometimes it has been given too late. Premature spontaneous rupture of the membranes therefore has great significance. Our knowledge in this field has been widened. It remains to be determined in further studies whether in the presence of disproportion and premature rupture of the membranes no consideration should be given to the child or abdominal section should be performed. The prolongation of the first stage of labor with an intact amnion has no disadvantage for either the mother or the child.

R. KERN (G)

Caldwell W. E. and Studdiford W. E. A Review of Breech Deliveries During a Five Year Period at the Sloane Hospital for Women. *Am J Obst & Gyn* 1929 xviii 623

The authors review 348 breech deliveries occurring at the Sloane Hospital for Women, New York during the years from 1923 to 1927 inclusive. Ninety two of the babies were markedly premature or macerated weighing under 4 lb. In 256 cases the gross mortality including all stillbirths and neonatal deaths was 14 per cent. Even when 4 cases of gross fetal abnormality incompatible with life and the cases of serious placenta previa are deducted, the net mortality was 11.1 per cent.

A very large proportion of the infant deaths in breech births occur among macerated, abnormal and premature children and in cases of multiple birth. This mortality will be reduced by better prenatal care.

branes and when the pulse and temperature were normal. In 3 cases autopsy revealed suppuration in the wound as the point of origin of the peritonitis.

In the last ten years 134 deep cesarean sections were done with 10 deaths 6 of which were due to eclampsia 1 to valvular disease 1 to collapse eight hours after the operation with premature separation of the placenta and 2 to pulmonary embolism. Not a single fatality was due to infection. In 3 cases there was a suppuration of the abdominal wound. Thrombosis occurred in 13 cases and embolism in 2. Aside from the frequency of thrombosis the postoperative course was much more favorable than in the series of cases in which the classical cesarean section was performed. In 12 cases amputation or total extirpation of the uterus was done after the cesarean section because of an existing infection. With the exception of 1 or 2 cases the uterus was opened *in situ* in the abdominal cavity. In spite of the unavoidable soiling of the abdominal cavity in these manifestly infected cases no signs of peritonitis developed. In 21 cases there was a suspicion of infection. In 14 cases the virulence test was carried out previously so that the result was known at the time of operation but in others it was first made immediately before the operation and the result determined twenty-four hours later. In all cases it showed the bacteria to be avirulent (marked reduction in the number of bacteria).

In 1 case the almost uncomplicated course after cesarean section in the presence of severe infection was especially noteworthy. This was the case of a primipara at the end of pregnancy. Three days before the patient's admission to the hospital an increasing swelling of the vulva extending to the anal region appeared with severe pain and repeated chills. In the left labium the coconut sized swelling presented a necrotic area as large as the palm of the hand. An erysipelas like zone appeared in the adjacent regions extending up to above the symphysis and inguinal region and to the buttocks and the thighs. The temperature was 37.5 degrees C and the pulse 100. Extensive incisions were made and pus was found in the darkly discolored tissues. Throughout this area and also in the inguinal region the tissue was discolored and did not bleed. There was no pus only a thin fluid secretion which contained numerous gram positive and gram negative bacilli and streptococci. The treatment consisted of drainage and the application of compresses of potassium permanganate. Shortly thereafter labor pains began. The cesarean section could be done only after an incision above the umbilicus. For the first fourteen days the postoperative course was afebrile. Then thrombosis developed. The greater part of the left labium was cast off. The wounds cleared up in the course of a few weeks. An anal fistula which appeared at the lower angle of the wound on the right side near the perineum indicated an anal abscess as the point of origin of the infection. The virulence test revealed a marked reduction of the hemolytic streptococci and anaerobic organisms.

The author emphasizes that, except in this particular case the recently employed deep cesarean section offered the best possibility for the limitation of an infection from the uterine incision. He repudiates the extraperitoneal cesarean section as the normal method on account of its complexity.

In cases of severe infection the uterus must be sacrificed after the cesarean section. The methods which make it possible to preserve the uterus in such cases (fistula of the uterus and abdominal wall and temporary exteriorization of the uterus according to Portes) are mentioned but not recommended.

The difficulty in infected cases is due to uncertainty as to whether the infection is dangerous or slight. The author believes that this can be determined only by means of the Ruge virulence test as modified by him. In the last two years he has carried out this test in all doubtful cases. He maintains that the deep cesarean section with effective peritonization can be performed without danger even in cases of manifest infection when the virulence test shows that the virulence is low. In cases of moderate infection the retrovesical cesarean section with drainage into the vagina the extraperitoneal cesarean section delivery through a fistula of the uterus and abdominal wall or the operation of Portes comes up for consideration. In cases of high virulence amputation or total extirpation of the uterus must be done.

The value of the virulence test in cesarean section is impaired by the fact that the result is known only after twenty-four hours. In cases of narrow pelvis when the necessity for cesarean section is indicated by the calculated period the result will be available in time. In others it can be determined only on the day of operation. In cases with somewhat greater virulence of the bacteria the total extirpation may still be done on the day after the cesarean section. In cases with high virulence of the bacteria, the woman cannot be saved. However such cases are rare.

SIENGER (G)

Horner D. A. Postcesarean Bursting of Abdominal Wounds. A Report of Three Cases. *J Am M A* 1929 XCIII 1126

Spontaneous rupture of an abdominal incision may be partial resulting in postoperative hernia or complete the abdomen being opened and its contents exposed. Horner reports three cases of complete wound separation following cesarean section.

Case 1 was that of a thirty-three year old primipara at term who was suffering from acute bronchial asthma and marked cardiac decompensation. The patient has had a previous myomectomy. Because of the dyspnea cardiac exhaustion and pulmonary edema a classical cesarean section was done under local anesthesia. The uterus was closed with three layers of catgut sutures the peritoneum with a running catgut stitch the fascia with interrupted chromic catgut and the skin with silk and tension sutures of silkworm gut which included all layers to the peritoneum. On the seventh day after the opera-

that the moulded and flexed fetal head must be regarded as being very nearly symmetrical about its long axis

He regards the fetus as being propelled through the passage by a driving force from above and the passage as being practically circular in cross section at every point and having a bend of almost a right angle at its lower end. The fetus is considered a double cylinder one half of which is formed by the head and the other half of which is formed by the trunk. These cylinders are so articulated that one can be bent on the other with different facility in different directions. Part of the driving force exerted on the fetus in causing it to pass through the curved canal is absorbed by that body and converted into certain unequal lateral forces. These pressures reacting on the fetus bring into play tangential forces which in turn are the cause of rotation.

Mour has devised an ingenious model by which he is able to explain his theory and all possible positions of the fetus in relation to the pelvis.

ABRAHAM A. BRAUER, M.D.

Kärstad, J. The Treatment of Placenta Prævia at the Gynecological Clinic in Oslo in the Period from 1907 to 1927 (Behandling der Placenta prævia an der Frauenklinik in Oslo von 1907-1927). *Norsk Mag. Lægeridn.* 1929, 30: 265.

The period from 1907 to 1927 was chosen for this study because the clinic being under the same direction, the principles of treatment were practically constant. In recent years the question of the advisability of cesarean section in placenta prævia arose. The results of the operation were promising but cesarean section was not adopted as the standard procedure. A university clinic being a teaching institution cannot leave out of consideration the demands of practice. The ideal would be to treat all cases of placenta prævia in a hospital.

The material reviewed by the author included 367 cases of which 71 (20 per cent) were those of primiparae. Central placenta prævia occurred 101 times, lateral placenta prævia 127 times, and a deeply implanted placenta prævia (with hæmorrhage before labor) 133 times. The mortality was 4.7 per cent (17 deaths). The fetal mortality was high. Of 364 children (3 pairs of twins), 209 (57.4 per cent) died. Of these 209 children, 92 were dead before the mother's admission to the hospital or were immature (born less than thirty-four weeks).

The type and time of treatment must be varied according to the severity of the bleeding. In 97 cases the bleeding stopped spontaneously but in this group there were 2 deaths from hæmorrhage after delivery.

In placenta prævia the pains are frequently unsatisfactory. Pituitrin often fails after artificial rupture of the membranes. The author cites the method of Willet, who recommends grasping the scalp with a vulsellum after rupture of the membranes in vertex presentations and pressing against the site of the bleeding placenta by continuous traction.

In the cases reviewed, Braxton Hicks version was done 131 times with 8 maternal deaths, a mortality of 6 per cent. The fetal mortality was more than 90 per cent. After metrecrurysis the fetal mortality was 78 per cent. Markedly exsanguinated patients should be given a transfusion of blood or saline solution before being subjected to intervention of any type.

Cesarean section was done 25 times for placenta prævia. One woman died twenty-five days after delivery from embolism. Two children died, a fetal mortality of 8 per cent but 1 of them was dead before the operation. Up to the present time the indications for cesarean section have been: (1) an unselected patient with a living and viable child, (2) marked hæmorrhage from the beginning of labor especially in a primipara, (3) a severely exsanguinated patient in whom cesarean section is the most rapid and most blood sparing delivery without consideration of the child.

At the University Clinic in Oslo, the vaginal cesarean section was carried out only 3 times for placenta prævia. The chief of the clinic is opposed to this procedure. Postpartum hæmorrhages occurred in only 5 per cent of the cases of placenta prævia. In the last year, 3 cases of cervical placenta prævia were treated with good results but these cases are not reported in detail. The incidence of fever after placenta prævia was about 30 per cent. The most dangerous infections developed after version.

SJØGAARD (G)

Skjæraa, K. Cesarean Section in Infected Labors (Kaiserschnitt bei infizierten Geburten). *Norsk Mag. Lægeridn.* 1929, 30: 249.

Since 1919 the deep intraperitoneal cesarean section has been the normal method at the University Gynecological Clinic at Oslo. The results have been so good that the indications have been extended and the operation has been performed even in cases which did not meet the demands of absolute cleanliness. In the last few years cesarean section was done also in a few cases of manifest infection. Previous to the operation the bacteria of the vaginal secretion were examined by means of the virulence test and found of low virulence. There is reason to assume that this method of examination is of value in establishing the indication for cesarean section in infected cases.

The author compares the results of the deep intraperitoneal cesarean section during the years 1918 to 1918 at this clinic with the results of the classical cesarean section performed in the period from 1906 to 1918. The classical cesarean section was done 61 times during this period with 21 deaths. Eight of the deaths at the most were due to the operation. In 5 cases the cause of death was peritonitis. Of the 50 women who survived 30 had an uncomplicated postoperative course. In 6 cases there was suppuration of the wound. Thrombosis and embolism each occurred once. In 4 of the 5 cases in which death resulted from peritonitis the operation was performed at the beginning of labor before rupture of the mem-

PUERPERIUM AND ITS COMPLICATIONS

Polak J O and Clark C Puerperal Morbidity and Mortality *J Am M Ass*, 1929 *xviii* 1436

In a study of nearly 1,000 maternal deaths the authors found that 58 per cent were caused by generally preventable conditions such as septicæmia, toxæmia and hæmorrhage and that in 58 per cent of the fatal cases operative procedures had been carried out. He classifies as morbid any case which shows an elevation in the temperature to 100.4 degrees F at any time after the first twenty-four hours during the patient's stay in the hospital. Seventy-five per cent of the morbidity in the clinics in and about New York is caused by infections of the breasts and upper respiratory and urinary tracts.

There is evidence that patients with a previous streptococcal infection immunize themselves to a considerable degree against subsequent streptococcal infection.

ALBERT W HOLMAN M D

NEWBORN

Voron Gaucheraud and Chavent Hæmopericardium Following the Intracardiac Injection of Adrenalin in the Case of a Newborn Infant (Hémopéricarde consécutif à une injection d'adrénaline intracardiacque chez un nouveau né) *Bull Soc d'obst et de gynéc de Par* 1929 *xviii* 563

The authors report an attempt to resuscitate a newborn infant by intracardiac injections of 1,000 adrenalin following spontaneous breech delivery aided by Mauriceau's maneuver. The heart tones were irregular and feeble and there were no respiratory movements. Three injections of adrenalin of 1 cc m of each were given into the heart after other measures had failed. Death occurred two hours after birth.

Autopsy revealed intracranial hæmorrhage and an extensive hæmopericardium. The three injection sites were plainly visible—two on the surface of the left ventricle and one penetrating the coronary vessels.

The authors comment on the paucity of authentic case reports of resuscitation of the newborn by the method described. They believe that puncture of the cardiac vessels offers grave possibilities and advise using only needles of the finest gauge.

HAROLD C MACK M D

MISCELLANEOUS

Jellett H The Future of Obstetrical Practice *Lancet* 1929 *ccxxviii* 859

The art of midwifery has passed through many stages. It may be assumed that originally women delivered themselves as do wild animals and with as little danger to themselves. Human life becoming more complicated and artificial, pre-existing diseases became more frequent and mechanical complications of labor appeared more often. To the ordinary risks were added the risks of blood infection intro-

duced by those whose object it was to assist. In the past, interference with labor was limited and asepsis was unknown, today interference is frequent and asepsis is occasional. In the future, if maternal mortality is to be brought to the minimum, interference must be avoided as far as possible and asepsis must be positive.

The art of midwifery has three aims: to bring the mother safely through pregnancy, labor, and the puerperium; to insure the delivery of a healthy infant; and finally to leave the mother in as normal a condition at the end of the puerperium as she was at the beginning of the pregnancy. The accomplishment of these aims is dependent upon the obstetrical attendant: the antenatal diagnosis and care and the environment.

The chief essentials of the management of normal labor are asepsis and the avoidance of interference. The specialist and the midwife are in a better position to offer the proper care than the general practitioner whose contact with various infections and lack of sufficient time render it difficult for him to obtain asepsis or give expectant treatment. Statistics show that in Holland, England, Wales, Australia and New Zealand the maternal death rate from sepsis was from four to six times greater in cases attended by practitioners than in those attended by midwives. The necessity for adequate training of medical practitioners in the prevention and treatment of obstetrical anomalies is evident. Thoughtful antenatal diagnosis and care, effective assistance in abnormal labor and sufficient postnatal supervision are the particular responsibilities of the medical profession. A suitable environment is one which permits the labor to be carried out with the same degree of asepsis as that with which a surgical operation is performed.

The author attributes the unduly high maternal mortality to the conduct of normal labor by general practitioners which introduces unavoidably the factors of: (1) haste unnecessary interference, and sepsis; (2) insufficient medical education of both medical practitioners and midwives which in the former is responsible for insufficient skill to treat obstetrical disease and complications and in the latter for insufficient knowledge to diagnose pathological conditions and appreciate the necessity for asepsis; (3) inadequate antenatal diagnosis and care which may lead to unnecessary deaths from toxæmia, sepsis, hæmorrhage and mechanical difficulties; and (4) unsuitable environment which leads to exogenous infection.

ALICE F MAXWELL M D

Holmes R W, Mussey R D and Adair F L Maternal Mortality *J Am M Ass*, 1929 *xviii* 1440

In the United States puerperal infections stand first among the causes of maternal mortality. Most of them are contact infections, their source being a streptococcal infection of the upper respiratory tract of the obstetrician, midwife, nurse or other attend-

tion, following removal of the retention sutures the entire wound parted exposing several coils of bowel. There was no shock. The wound was sutured immediately with through and through silk worm sutures, but six hours later following a violent coughing spell, it re-opened and urine escaped from the abdomen (bladder rupture). Replacement of the distended bowel being rendered impossible by the patient's dyspnoic straining an artificial elastic abdominal wall was constructed by covering the protruding mass with a rubber dam the edges of which were sutured to the skin. Perforations in the rubber permitted the escape of urine and other discharges. On the sixth day when the rubber dam was removed the coils of intestine were found covered by a fibrous sac. This sac eventually epithelialized. The vesical fistula closed spontaneously. The patient was discharged on the twenty fifth day following the accident, with a large postoperative hernia.

Case 2 was that of a para vi thirty five years of age who had a bicornate uterus. The patient's first child was stillborn and her second child died following the induction of labor and version for transverse presentation. Two weeks before term in her third pregnancy she entered the hospital with the fetus in transverse presentation. The thyroid was enlarged but no symptoms of hyperthyroidism were present. The patient coughed frequently but the rales and cough ceased after a few days of rest in bed. Laparotrachelotomy was performed under local anesthesia with closure of the peritoneum muscle fascia and fat with catgut and of the skin with silk. Immediately after the operation the cough returned. Following the removal of stitches on the tenth day a mass was seen at the lower end of the wound. The patient then had a violent coughing spell and the entire wound burst open with loops of intestine protruding through holes in the omentum. There was no shock or evidence of infection. Immediate closure was done under local anesthesia. It was discovered that several of the sutures had torn out of the fascial incision. The omentum and intestines were easily replaced in the abdominal cavity and the wound was re-united with silk worm figure of eight sutures and catgut sutures for the fascia. The wound healed by primary intention and the patient was discharged on the seventeenth day following the secondary repair.

The third case was that of a thirty five year old primipara in labor at term who was suffering from nephritic toxemia, decompensated aortic regurgitation albuminuria 2+ and a blood pressure of 200 systolic and 70 diastolic. As the head was floating after eight hours of moderately severe labor a laparotrachelotomy was done under local anesthesia. The abdomen was closed as in Case 2. On the fourth day following several severe paroxysms of coughing the dressings were saturated by a discharge coming from a small opening in the center of the incision. The following day the entire wound separated. There was no shock. The bowel was gently freed from the skin edges and the skin was drawn together by sterile adhesive strips. Twenty four hours later, after

severe and continued coughing the intestines were again forced through the wound. No trace of catgut was found when the incision was prepared for secondary closure and the wide gaping of the wound made it impossible to bring the edges together by sutures. Half inch rubber tubing was laid along each side of the abdominal opening and fastened by silk worm sutures extending through the recti muscles. The omentum and bowel were covered by petrolatum covered rubber tissue and the tube were pulled together by heavy silk. The rubber dam was removed before the last stitch was tied. The patient recovered without hernia and was discharged thirty seven days later.

The frequency of bursting of the abdominal incision after section varies in different clinics from 0.2 to 2 per cent. The healing of wounds is influenced by age, obesity, coincident disease, the character and type of the closure, the quality and quantity of the suture material, the degree of hemostasis and infective processes. The early absorption of the catgut in one of the cases reported may be explained on a physicochemical basis the toxic condition causing a difference in the tissue juices which in turn caused rapid and complete disintegration of the sutures. It is noteworthy that the three patients were poor surgical risks. All were over thirty three years of age and in all the pregnancy was complicated by such conditions as bronchial asthma, coughing obnephritic toxemia, brown compensation, gonorrhea and bronchitis. Continued coughing may be a predisposing factor in the production of dehiscence.

The opened wound edges and exposed viscera in a few hours are covered by a yellowish fibrous deposit associated with a free flow of straw colored transudate from the peritoneal cavity. The fibrous deposit soon walls off the general peritoneal cavity agglutinates the bowel omentum and retracted wound edges and by contracting draws the margins together. Except in cases of violent strain dehiscence is an unexpected complication. Attention is called to the wound by a watery discharge (peritoneal fluid). Symptoms of peritonitis or intestinal obstruction may occur.

The breaking open of an abdominal incision may be a most serious complication. Strangulation of the bowel and omentum and general peritonitis are the usual causes of death. When infection of the wound is the cause of or associated with the rupture the mortality is high. Statistics show that the death rate in gynecological laparotomies with this complication ranges from 20 to 75 per cent.

Prophylaxis is an important element in the treatment. The effect of the distention of pregnancy on the tissues of the abdominal wall must be considered. Staggering of the incision in the different layers of the abdomen so that no structure is opened in the plane of the one above has been suggested. The author emphasizes the importance of preventing tissue necrosis and the value of interrupted and retention sutures in the closure of the abdominal wall.

ALICE F. MAXWELL, M.D.

GENITO-URINARY SURGERY

ADRENAL KIDNEY, AND URETER

Ferrer J C Renal Compression *J Urol* 1929
xxi 433

The author has made very interesting models of the vascular supply of the kidney demonstrating changes in the vascularity of the organ under various pathological conditions

He differentiates between renal compression and renal obstruction. Obstruction is caused by a blockage and may be subacute, acute or chronic whereas compression is the effect of an external agent and is always chronic

He concludes that the distention of the renal pelvis incident to pyelography especially when the medium is left in a diseased pelvis may compress the venous flow in the kidney sufficiently to produce a back pressure resulting in temporary anuria. Obstruction to the outflow of urine from the lower tract will also cause urinary stasis in the renal pelvis

When in cases of obstruction the intrapelvic pressure reaches the vesical pressure the ureter will try to protect the kidney by increasing its wave of contraction. However as this increasing force of the ureteral wave must end in fatigue the urine in the pelvis will ultimately become stagnant as eventually it will no longer be carried away with each ureteral contraction. The kidney will then become obstructed by the pelvic residual urine and passive congestion due to venous compression by the distended pelvis will result

In chronic prostatic hypertrophy there is beginning true renal compression. Venous compression in the kidney is in direct proportion to the pressure exerted by the distended pelvis and calyces

Renal compression results in destruction of kidney tissue. In atrophic hydronephrosis the renal compression is general whereas in the presence of tumors of the kidney substance which compress the renal parenchyma and in the presence of cysts or stones located in any region of the kidney except the pelvis it is partial

Ligation of a renal papilla without ligation of the ureter will bring about a dilatation of the tubules without producing pelvic distention. When Ferrer endeavored to ligate the superior major calyx and fill the venous tree completely with celluloid to make a model he obtained a distention of the entire renal tree from pressure exerted by the pelvis and calyx without any definite distention in the superior pole

He draws the following conclusions

1 Renal compression when total is the result of chronic renal obstruction

2 Partial renal compression the compression produced by tumors of one pole of the kidney or by

stones in the kidney substance or incarcerated in a minor calyx or even in one of the major calyces will not, *per se* produce true hydronephrosis

3 Bilateral hydronephrosis will occur only when there is an obstruction in the lower urinary tract which causes back pressure on the pelvis. If a free collateral venous circulation is formed on or around the kidney capsule pressure atrophy will take place in the renal substance with the formation of an atrophic hydronephrosis

4 When atrophic hydronephrosis is once established the atrophy will always take the form and shape of the venous arches that surround the superior portion of each renal papilla

J SYDNEY RITTER M D

Beer E The Diagnosis and Treatment of Chronic Renal Tuberculosis *Am J Surg* 1929 vii 607

In renal tuberculosis the most characteristic symptoms are referable to the bladder—urgency, frequency, burning at the neck of the bladder or urethra during urination and pyuria with or without microscopic or gross hematuria. Urotropin usually irritates the bladder and bladder irrigations rarely give relief. If improvement results it is only temporary. The patient is usually treated for months for subacute or chronic cystitis and the urologist is consulted only after such treatment has failed. In every case of persistent pyuria a search for tubercle bacilli should be made in smears and by guinea pig inoculation if the catheterized urine is sterile. Pyuria and persistent bladder irritation should lead to the suspicion of renal tuberculosis

In some cases the condition simulates nephrolithiasis causing pain in the kidney which is of a rather colicky nature and sometimes is associated with bleeding. Roentgenography may reveal definite shadows resembling those of renal stone

A third type of case presents a history suggestive of essential hematuria or renal neoplasm with massive bleeding more or less discomfort or colicky pain in the region of the ureter, and marked hematuria

The fourth type is most confusing of all showing only an inexplicable pyuria without renal symptoms

A fifth type begins in the same way as the first type but its symptoms gradually subside either with or without treatment. This is the auto-nephrectomy type

A sixth type simulates subacute or acute pyelonephritis

In the seventh type the symptoms are those of perinephric suppuration and tuberculosis is suspected until the persistent sinus following drainage demands nephrectomy when the kidney is found to be involved by fully developed tuberculosis

The authors emphasize the necessity of educating the laity regarding the dangers of abortion toxemia and infection and the importance of good care during pregnancy, labor and the puerperium

ALBERT W HOLMAN M D

Williams J W A Clinical and Anatomical Description of a Naegele Pelvis *Am J Obst & Gynec* 1929 xviii 504

The author reports the case of a woman with a typical Naegele pelvis who had had six spontaneous labors and died after the operative delivery of a seventh child. In the first three of the four labors which were conducted in a clinic the largest child weighed 2 900 gm and had a biparietal diameter of 8 75 cm. The child delivered in the fourth labor weighed 3 400 gm and had a biparietal diameter of 9 5 cm.

The woman walked without a limp. Her abnormal bodily habitus was so slight as to escape detection by any but the acute observers. There was nothing in her history to indicate that she had at

any time suffered from inflammatory bone disease.

In the last labor the first stage lasted seventeen hours and the second stage two hours. After failure with forceps version was done. The patient was delivered at her home. Several hours later she was so seriously ill with a rapid pulse and abdominal pain and distention that she was brought to the hospital. Williams saw her shortly after her admission. A diagnosis of traumatic rupture of the uterus with intra abdominal bleeding was made. Operation revealed a large quantity of free blood and a rupture of the uterus through the right and anterior portion of the lower segment. Supravaginal hysterectomy was done. The patient left the operating table in good condition, but broncho pneumonia developed on the second day after the operation and her temperature remained elevated until death occurred on the twenty fifth day. Autopsy disclosed tuberculous pneumonia and a minor infective process in the pelvic cavity.

The pelvis is described in detail.

E L CORVELL M D

Vander Veer J N Urological and Surgical Care of Nephrolithiasis *Am J Surg*, 1909 vii 662

The author believes that probably 33 per cent of all persons with renal stone are better off without operation and will live longer if given medical treatment. He emphasizes that the probability of death within a short period after operation must be balanced against the destruction which occurs during medical treatment. This can be done only by careful preliminary examinations over a variable period of time and by those accustomed to deal with such cases.

It is comparatively easy to roentgenograph the stone and remove it surgically, but in 25 per cent of cases of single stone recurrence develops in from one to ten years after nephrotomy or pelvotomy. In twenty eight cases reviewed by the author which were not operated upon there have been no recurrences to date up to fifteen years.

The incidence of recurrence of stone in the kidney following conservative operation is less than 10 per cent. Many so called recurrences are stones overlooked at the first operation. As there is a definite period of stone formation a high incidence of recurrence may indicate that the patients were not completely past this period at the time of operation. The incidence of subsequent recurrence in the remaining kidney following nephrectomy is so low (2.75 per cent) as to indicate that an anatomical factor was present in the affected kidney. The incidence of recurrence is greater in cases of single stone than in those of multiple stones, and in those of small stones than in those of large stones. It varies more according to the thoroughness of operation than according to the type of operation. While pelvolithotomy is the method of choice, the danger of subsequent hemorrhage following limited nephrolithotomy is slight. Nephrolithotomy is indicated particularly in the presence of cortical degeneration adjacent to the stone. A definite group of cases presents a history of repeated stone formation at frequent intervals over a long period. The average interval between primary operation and stone recurrence is about two years. Fluoroscopy is essential with every conservative operation as it reduces the incidence of recurrence below 5 per cent.

The causes of stone formation include infection of the kidney by way of the blood stream from foci of infection in the teeth, tonsils, ears, sinuses, gall bladder or elsewhere; physiological factors including a poorly chosen diet, faulty metabolism, coloidal changes combined with the formation of crystalloids, electrolytic conditions in the urine and mechanical factors such as pressure from a tumor, a gravid uterus, abscesses, adhesions, a floating, movable, misplaced or malformed kidney, ureteral structure and spasm or paralysis of a calyx due to local or systemic nerve involvement.

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urological surgeon seeks to keep the patient under observation until long after his services appear of use. His after care tends toward the prevention of recurrence and he endeavors to search for primary causes previously undiagnosed or untreated and to determine whether they are due to congenital or acquired physiological causes.

LOUIS NEUWELT M D

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The author reports a case in which the preoperative diagnosis was pyonephrosis on the left side and the pathologist's report showed the condition to be chronic pyonephrosis with pelvic leukoplakia.

There are two principal theories regarding the cause of leukoplakia of the renal pelvis. According to one, the leukoplakia is a metaplasia or adaptation to or protection by cornification against a chronic irritative inflammatory environment. According to the other it is of congenital origin, being due to misplaced embryonal cell rests from the primitive ectoderm.

ETHEL HESS M D

Judd E S and Hand J R Carcinoma of the Renal Cortex with Factors Bearing on the Prognosis *Arch Int Med* 1929 xlv 746

An analysis was made of 367 cases in which operation was advised for carcinoma of the kidney. Attention is called to the fact that this series includes cases in which operation was performed in the period from January 1, 1901 to January 1, 1928. Three hundred and thirty of the patients have been traced. Although insufficient time has elapsed since the operations done in recent years to warrant definite conclusions concerning the postoperative course, the authors believe that the general average of preoperative and postoperative data presents many features worthy of record.

Sixty eight and thirty nine hundredths per cent of the patients were men. The average age of the entire group was fifty one and seventy six hundredths years. The tumor involved the right side in 46.04 per cent of the patients and the left side in 53.96 per cent. Hematuria, pain, and tumor were observed as the 3 cardinal features. Hematuria occurred as the first symptom in 43.86 per cent of the cases, pain in 37.32 per cent, and tumor in 13.62 per cent.

Of the 283 patients subjected to nephrectomy who were traced, 192 are dead after an average postoperative life of twenty three and twenty six hundredths months. There were 30 deaths in the hospital. Ninety-one patients are living and have lived thus far an average postoperative life of sixty and eighty eight hundredths months.

Of 47 patients subjected to exploration alone, 45 are dead after an average postoperative life of eight

Occasionally the patient's history or that of his family points to a urinary tract tuberculosis. There may be a definite family history of attacks of pleurisy or pulmonary tuberculosis joint or spine involvement, cervical adenitis or chronic epididymitis. The persistent pyuria will then suggest tuberculosis. The general health rarely suffers unless mixed infection with chills and fever develops. There may be a loss of weight from loss of sleep caused by nocturia but as long as the disease is unilateral and massive hæmaturia does not occur the general health is not much impaired. When there is bilateral involvement (from 10 to 20 per cent of the cases) lassitude anorexia loss of weight pallor disturbances of renal excretion and protein metabolism and suburemia or uræmia develop. The disease progresses slowly until death occurs within one or two years after the beginning of the bilateral involvement, renal insufficiency, pulmonary tuberculosis, or military tuberculosis.

Physical examination of the kidney is of little value. The involved kidney may be enlarged especially if it is excluded and hydronephrotic or pyonephrotic but sometimes the healthy kidney is larger. Tenderness may be present but is usually negligible. Vaginal or rectal palpation may reveal a thickened rigid ureter.

The diagnosis is made by cystoscopy and ureteral catheterization. Tuberculosis is proved only by the presence of tubercle bacilli but the bladder findings may be sufficient for a diagnosis of tuberculosis of the kidney even in the absence of a positive smear or guinea pig test. The cystoscopic picture of secondary cystitis from renal tuberculosis varies. The earlier cases rarely show more than a hyperæmia with or without rigidity of the ureteral orifice. Later there may be hæmorrhagic spots in the bladder mucosa and the ureteral meati may become more rigid and oedematous. Tubercles appear as whitish yellow spots with a hyperæmic base which break down and form irregular sharply cut out ulcers with overhanging edges. Ureteritis produces shortening of the ureter and retraction of the ureteral region. The ureteral meati become sunken. With secondary infection the bladder becomes contracted. The lesions are most marked at the ureteral meatus of the affected side but may be present also on the opposite side even when the kidney is normal. Rarely the anterior bladder wall is involved. In females ulcerations extend into the urethra and even to the external meatus. Distention of the bladder may cause the ulcerated surfaces to bleed. In advanced cases the passage of the ureteral catheter is obstructed by a tuberculous stricture. Such a stricture may result also in autonephrectomy. The use of indigocarmine helps not only in the estimation of renal function but also in the localization of the orifices in badly diseased bladders. Early cases may show no disturbance of renal function but as the disease progresses the concentration of the dye diminishes and the time of its excretion is delayed.

Cystoscopic studies must be made very carefully to prevent contamination of specimens in transit through the bladder or by reflux up the ureter. The catheter should be plugged externally, specimens should be collected when the bladder is empty, and only late collections should be used for smears and guinea pig inoculations. When these precautions are taken pyuria and tubercle bacilli almost invariably mean renal tuberculosis. When a catheter cannot be passed far enough to obtain satisfactory specimens, reliance must be placed on the characteristic bladder picture, the strictured ureter and the presence of tubercle bacilli in the bladder urine with absence of pus and tubercle bacilli in the urine of the other kidney. In some cases the urine from the other kidney may show evidences of toxic nephritis such as albumin and casts but these usually disappear following nephrectomy on the diseased side. In males prostatic tuberculosis may produce a clinical picture similar to that of cystitis of renal tuberculosis. Excretory bacilluria may be produced in this way.

When the urine is full of pus the antiformin method may be necessary. The carbol fuchsin stain usually suffices to show the bacilli. The author stains both the kidney and bladder specimens for control purposes. Activating doses of tuberculin may be given to produce showers of the bacilli especially when there is intrarenal exclusion.

Roentgenography reveals either irregular opaque plaques or porous calcified areas outlining the calyces pelvis or ureter. Cystography especially if it shows fixation and deformity in and around the diseased ureter is only corroborative evidence. If the diagnosis is possible without pyelography, the latter should be avoided as it causes added trauma. When required it shows one or more strictures in the ureter with dilatation between and hydronephrosis with excavation of one or more ragged calyces. The same calyceal disease may be seen, however, with non tuberculous disease.

Occasionally exploratory operation is necessary to decide whether one or both kidneys are tuberculous. The thickened firm ureter confirms the diagnosis.

Nephrectomy with removal of the upper ureter is the operation of choice in chronic renal tuberculosis. If the ureter is badly stenosed and is dilated above the stricture, the operation of choice is an aseptic nephro-ureterectomy through two incisions: a lumbar incision for the kidney and a pararectal extraperitoneal incision for the lower ureter. The kidney and attached unopened ureter being brought out through the lumbar wound. The author believes that sinuses and tuberculosis of the wound are due to a traumatic bacillæmia induced by the operator and that therefore gentleness in operating is essential to avoid squeezing tubercle bacilli into the circulation.

The after treatment is important. Even in cases without tuberculous foci it should include good food, rest and hygienic surroundings.

LOUIS NEWELL, M.D.

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cen and seventy eight hundredths months. Of the 2 who are living 1 has lived thus far a post operative life of eighteen and seventy eight hundredths months. Metastasis occurred in 50 cases and recurrence was reported in 51 cases. In the cases of involvement of the renal vein the immediate mortality was not appreciably different from that in cases without involvement of the renal vein but the number of patients who died postoperatively was much higher among those with involvement of the renal vein.

Surgical approach through a posterior incision and removal of the upper portion of the ureter are important factors in nephrectomy for carcinoma of the kidney.

The value of the roentgen rays or radium or both as additional aids to surgery is difficult to estimate since irradiation was used only in cases in which the prognosis was poor namely cases with extensive involvement of the perirenal tissue in which it was believed that not all of the tumor tissue had been removed. In some of these cases treatment by roentgen ray was not always given under the supervision of physicians of the Clinic.

Carcinoma of the renal cortex are extremely malignant and are often well advanced before they produce symptoms. Alveolar carcinomata or those showing less cellular differentiation are the most highly malignant whereas adenocarcinomata (or papillary adenocarcinomata) are less malignant as judged from their clinical course. Better end results are dependent on earlier medical consultation by the patient after the onset of the initial symptom or sign. The authors conclude that the end results as exemplified in the 106 cases in which the patients lived from three to twenty two and a half years justify the operation of nephrectomy for renal carcinoma.

Bump W S and Crowe S M. Uretero Ureteral Anastomosis. *Surg Gynec & Obst* 1929 xlv 346

The authors report the results of uretero ureteral anastomosis in dogs. The operation was done reproductively through a lumbar incision and was performed essentially by the McArthur method except that two fine catgut sutures passed through all layers of the ureter exterior to the lining were used to bring the ends of the ureter into apposition. The catheter for drainage of the urine was a No. 3 rubber urethral catheter which fitted the lumen of the ureter snugly. The catheter over which the ureter was sutured was also fitted snugly in order that the full caliber of the ureter would be maintained. The catheters were removed after from eight to fourteen days. A urinary fistula persisted for only a few days.

Examination of the ureters of six dogs nineteen twenty two thirty one fifty six sixty four and two hundred and seventy days respectively after division and suture with exclusion of urine from the site of repair and with maintenance of the full caliber of the ureter showed that healing occurred

without narrowing or appreciable dilatation of the lumina with a minimal scar without change in the renal pelvis and without evidence of any considerable damage to the kidneys.

THOMAS F FINEGAN, M.D.

Coffey R G. Bilateral Submucous Transplantation of the Ureters into the Large Intestine by Tube Technique. *Clinical Report of Twenty Cases*. *J Am M Ass* 1929 xciv 1529

The author believes that bilateral submucous transplantation of the ureters into the large intestine by the tube technique has now been perfected and is applicable to all conditions in which it is necessary or advisable to dispense with the bladder as a reservoir for urine. The indications include (1) ectrophy of the bladder (2) cases of incurable cancer of the bladder with a life expectancy of more than six months in which morphine or a palliative cystostomy is required (3) cases of inoperable carcinoma of the base of the bladder or prostate in which large doses of radium are required to justify a hope of cure (4) certain cases of early removable carcinoma in which fulguration and similar treatments are now used (5) cases of incurable tuberculous of the bladder in which one kidney has been removed and the other remains free from tuberculosis (6) tuberculosis of the prostate and seminal vesicles with or without perineal fistula (7) incurable vesicovaginal fistula (8) extensive incurable multiple perineal fistula due to various causes (9) certain cases of painful contracted bladder resulting from infection or ulceration and (10) severe traumatic injuries of the bladder.

Among the twenty cases reported by the author in which the operation was performed there were eight of cancer eight of ectrophy and two of tuberculosis of the bladder and two of incurable vesicovaginal fistula.

In three hopeless cases of cancer of the bladder with metastases the operation was satisfactory for the relief of the bladder distress but death resulted from general metastasis eight months seventy five days and two hundred and ninety days after the operation. In all of these cases renal function seemed normal to the end. In one case the metastases encroached on the bowel at a point above the implantation. At autopsy in this case the right kidney was found dilated and seriously injured but the left kidney was practically normal. The valve action was good. At autopsy in the case of the patient dying two hundred and ninety days after the operation the kidneys appeared practically normal on macroscopic examination but on microscopic examination the parenchyma was found badly injured. The size of the right ureter which was dilated at the time of operation had decreased. The valve action was good.

In a case of cancer which was hopeless because of the extent and duration of the lesion the bladder was destroyed the growth kept down locally and the patient rendered comfortable by a tremendous

dose of radium. The blood picture is better today than when the operation was performed a year ago.

In two cases of cancer infiltrating the base of the bladder no remote metastases were discovered. One of the patients took drugs to relieve the pain before the operation and still takes amidopyrine. Since the operation he has gained weight and the cancer is diminishing under radium treatment. The other patient has been relieved of the bladder distress and is gaining in health.

One patient who was subjected to total cystectomy a year ago is still well.

In a case of cancer of the base of the neck of the bladder 7 000 mgm hrs of radium treatment were given (4 500 mgm hrs in the bladder and 2 500 mgm hrs in the vagina). The patient is still in the hospital. A cure is expected.

Of the patients with exstrophy of the bladder one died following the operation. Another was reported well two years after the operation but died of acute colitis at the end of two years and five months. Five patients recovered and are now well and comfortable. A patient who was subjected also to cystectomy is still in the hospital awaiting complete closure of the drainage wound before operation is performed for closure of the skin over the pubic arch. Her general condition is good.

In both of the cases of tuberculosis of the bladder one kidney was removed and the tuberculous bladder was left. Both patients are now comfortable.

The two patients with incurable vesicovaginal fistula are well.

Disquieting incidents experienced in these twenty cases were an abnormally high postoperative temperature, chills, pain in the kidney region and several major accidents.

Abnormally high postoperative temperature was observed in seven cases. It was attributed in two cases to the lighting up of a pre-existing pyelitis in one case to pyelitis resulting from infection following accidental puncture of the rectum with the sigmoidoscope and in one case to retroperitoneal infection from a ureteral leak caused by excessive traction in the removal of a catheter. In three cases no cause could be determined.

Chills occurred in four cases. In one case they were attributed to the intravenous administration of dextrose in one to leakage of the ureter in the retroperitoneal space and in one to pre-existing pyelitis which had been associated with chills before the operation. In one case they may have been due to either radium treatment or pyelitis.

Pain in the kidney region occurred in five cases. In three it developed at the time the catheters began to loosen and ceased after the catheters were removed. In one case it was probably due to pyelitis. In another there were two left ureters with a double kidney pelvis in one of which pyelitis was apparently present at the time of operation.

Major accidents occurred in five cases. In one case a sigmoidoscope was passed through the rectal wall carrying infection into the field. In another

sloughing of the right breast occurred after subpectoral infusion. In the third too much traction was made on the ureteral catheter which had become blocked, the anastomosis being thereby disturbed and a urinary fistula produced. In the fourth case the right ureteral catheter became blocked probably because of failure to introduce it past the psoas muscle. In the fifth case intestinal obstruction was caused by an unrepaired break in the peritoneum over the left psoas muscle and after removal of the obstruction the pressure of the caecostomy tube made an opening which resulted in local peritonitis and death.

From these incidents the author draws the following conclusions:

1 Traction on the catheters for the purpose of detaching them from the bowel should be avoided.

2 The assistant who prepares and packs the bowel should be familiar with the use of the sigmoidoscope.

3 The mlying ureteral catheter should extend well above the psoas muscle probably to within 4 in. of the kidney pelvis and possibly to the pelvis itself.

4 When the catheters become blocked with mucus, small blood clots and other debris they may usually be cleared by syringing with a 2 per cent boric acid solution. To avoid carrying infection upward the discharging ends of the catheters should be kept in bottles containing a 1:1000 solution of mercuric chloride.

5 To lessen the danger of incrustation in the lumen or at the eye of the catheter sodium biphosphate may be given.

6 If a catheter is completely blocked for twenty-four hours nephrostomy or a high ureterostomy should be performed.

7 In case an unrepaired breach in the peritoneum is left, an extra sheet of gutta percha laid over the space and extended outward with the quarantine may prevent intestinal obstruction.

In none of the cases reported was there any demonstrable evidence of serious postoperative kidney infection or peritonitis such as not infrequently occurred after the former two stage submucous transplantation without tubes. When the ureters firmly tied to the catheter above the rubber cuff with a ligature and the ends of the catheters drain into a 1:1000 mercuric chloride solution there is no possibility for infection to enter the ureter or kidney directly. After the rectum has been isolated with a clamp, cleansed with solution and dried with gauze and after the incision in the wall has been made between traction loops, a quarantine completely segregating and draining the operative area eliminates peritonitis.

In none of the twenty cases was there any demonstrable evidence of permanent injury to the kidneys which could be attributed definitely to the operation. In each of the two cases in which autopsy specimens were examined the right kidney showed marked degeneration. However as the cancer was located

in the right side of the bladder, involved the ureteral opening and produced marked dilatation of the ureter above at the time of the operation as there was extensive enlargement of the lymphatic glands along the course of the right ureter at the time of operation and as, at autopsy, the ureter was found to lie in a bed of metastatic cancerous tissue it may be presumed that the kidney was already damaged and unless operation had been performed it would have been involved even more seriously. The observations in these two cases suggest that the surgeon's first duty after opening the abdomen and before packing off the intestines is to palpate both kidneys carefully and make a record of their condition.

The average time elapsing from the beginning of the first incision to the tying of the last suture in the twenty cases was two hours and fourteen minutes divided approximately as follows: twenty-two minutes for opening of the abdomen and preparation of the rectum; twenty-two minutes for closure and application of the dressings; and one hour and thirty minutes for the double transplantation. In the last ten cases the average elapsed time was one hour and fifty-nine minutes. The time required for transplanting a single ureter is about thirty minutes less.

After the intestines have been packed out of the field the manipulations are delicate and shockless requiring minimal anesthesia. There should be no serious shock associated with the operation. Therefore accuracy is the chief desideratum. While the technique is far more exacting the inherent danger is less than that of such major abdominal operations as subtotal gastrectomy for cancer of the stomach or the main operation in radical removal of the rectum for cancer. The total elapsed time is about the same in the three operations.

In the twenty cases reported there was one surgical death—a mortality of 5 per cent.

TRAYERS C SEFITA M.D.

BLADDER URETHRA AND PENIS

Wilhelm S F Perforation of the Bladder During Cystoscopic Examination *J Urol* 1929 xxi 535

The author reports one perforation of the bladder during cystoscopic examinations occurring on his own service and two such perforations occurring on the services of colleagues.

In the first case the patient was examined under nitrous oxide-oxygen anesthesia. Vomiting occurred and was followed by a general spastic contraction which raised the buttocks off the table. A few drops of blood passed from the cystoscope and the instrument was immediately withdrawn. Pain in the lower part of the abdomen and the perineum was followed by shock. Catheterization withdrew a few drops of blood. Of 300 ccm of boric solution introduced into the bladder only 150 ccm were recovered. Signs of intraperitoneal fluid were present. Operation revealed free fluid in the peritoneal cavity

and fluid in the retroperitoneal and perivesical tissues. There was no intraperitoneal perforation. On the anterolateral wall of the bladder an extraperitoneal opening was found which opened into the space of Retzius. Autopsy thirteen days later showed tuberculosis of the right kidney, peritoneum, prostate, seminal vesicles and lungs.

The perforation in the second case also occurred during cystoscopic examination made under nitrous oxide-oxygen anesthesia. A stone had formed at the site of a tumor which had been removed by operation. The symptoms were similar to those in the first case. The perforation was found on the posterior wall of the bladder. Postoperative recovery was uneventful.

The third perforation was into the rectum and occurred at examination under local anesthesia. A retention catheter was used. Constipation was induced. The perforation healed without operation.

Sudden pain, shock, hematuria, burning inability to void and the sensation of tearing are very suggestive of perforation of the bladder.

In the diagnosis the injection of a sterile solution fluoroscopy with an opaque solution fluoroscopy with gas or air and cystoscopy may be harmful. The diagnosis should therefore be based on the clinical picture.

The differential diagnosis between intraperitoneal and extraperitoneal perforation is impossible as the symptoms are nearly the same. The peritoneum should be opened for inspection of the bladder.

The mortality has decreased since 1892. The prognosis depends upon the general condition, the type of perforation and the time at which operation is performed.

CLAUDE D PICKRELL M.D.

Donohue P F Submucous Cystitis *J Urol* 1929 xxi 465

Submucous cystitis may be due to chronic cystitis or to an embolic hematogenous bacterial infection from a distant focus as suggested by Hunner.

In both types the submucous areolar tissue is replaced by a densely infiltrated structure which in advanced cases may involve the muscle and perivesical tissue.

In the Hunner type the mucosa may be unchanged except for a small area of hyperemia. Forced distention may split the scar, causing submucous hemorrhage. The mucosa may be involved in the trauma. Lesions so produced may be single or multiple, small or large. They are not found in the trigone. In an advanced case the bladder becomes small, thick and unyielding.

In cases of submucous cystitis resulting from chronic cystitis the diagnosis is not difficult. The history is important. A complete urological study will reveal the primary cause. The cystitis is usually most marked in the trigone. If the primary cause has been eliminated the mucosa may appear normal except for areas of puckering and thick, pale patches of light absorbing epithelium. These cases are resistant to treatment.

In the second class of cases the history is very suggestive. The urgency does not come in attacks or colics but is constant. Sharp pain in the suprapubic area is present if the desire is not gratified. The urine appears clear but usually contains a few pus and red blood cells. Over distention which may cause hemorrhage may give temporary relief.

In early cases the submucous lesion may be very small, but careful search will show a fine stellate puckering with mild injection of the mucosa. Deliberate over distention of the bladder will cause submucous bleeding due to tearing of the inelastic submucous scar. Changes in the mucosa may be caused by trauma from distention of the bladder resulting from resistance to the desire to void. In advanced cases these areas may not reveal the true extent of the submucous area involved.

The author reports two cases illustrative of submucous cystitis secondary to infection of the upper urinary tract and four cases of submucous cystitis of the Hunner type.

In three of the latter there was a definite or suggestive history of a distant focus namely, ear, bundle cellulitis of the nose and tonsil infection. In the fourth the focus was undetermined. The last case was a borderline case between the two types. Two lesions were in the vault of the bladder and the others appeared on the lateral walls. Over distention gave a good result in the first case. In the remaining three cases favorable results were obtained from a combination of over distention and electrocoagulation.

CLAUDE D. PICKRELL, M.D.

Blane II. Fatty Calculi of the Bladder. Oleoliths and Medicamentous Calculi (*Des calculs graisseux de la vessie, oleoliths et calculs médicamenteux*) *J. d'urrol. méd. et chir.* 1929 xxviii 318

The author discusses a group of fatty calculi quite different from the urostoliths which are of endogenous origin. As they are only he calls them oleoliths to indicate their origin. They are produced by the action of any basic solution on any oily or fatty body introduced into the bladder for therapeutic purposes or by the simple decomposition of such an oily liquid in a bladder with incomplete retention. In the former case a soap is produced which forms a soft concretion that becomes encrusted with calcium salts. Concretions of this type are generally caused by gomenolized oil or silver nitrate. In the second case the oil being lighter than the urine remains in the bladder on urination and becomes a floating foreign body capable of forming soapy bodies on which ammonium magnesium phosphate is deposited. Within a calculus of this type there is a nodule of soap formed by the decomposed oil.

As stagnation in the bladder favors the production of oleoliths such stones are generally found in patients with prostatic disease, urinary stricture or spinal disease. Accordingly medicinal oils should not be injected in cases of complete or incomplete retention or when the bladder is infected or alkaline or if given should be left in the bladder only a short

time and then completely removed by irrigation. For the same reason care must be exercised in the use of paraffin cystoscopy. After this procedure the paraffin must be washed out thoroughly. Care is necessary also in the use of medicinal urethral pencils. Such pencils should not be given to the patient to introduce. They are often more or less fusible and sometimes the excipient employed in their manufacture is paraffin instead of cacao butter. Vesical calculi may result also from the use of silver salts.

It may be possible to dissolve oleoliths with benzine or xylol to melt them with water at a temperature of 50 degrees F. or to render them sufficiently hard to be grasped with the lithotripter by irrigating the bladder with boric acid solution at a temperature of 15 degrees F. If all of these methods fail they must be removed by surgical operation in the same way as other vesical stones.

AUDREY C. MORGAN, M.D.

Paschke R. The Non Specific Chronic Ulcers of the Bladder (*Die nichtspezifischen chronischen Geschwüre der Blase*) *Verhandl. d. deutsch. Ges. f. Urol.* 1929 p. 131

There are differences of opinion as to the nomenclature of non specific ulcers of the bladder since especially by American writers the same disease picture is designated by different names such as 'elusive ulcer', 'punctate ulcer', 'paracystitis', 'irritated bladder', and 'contracted bladder' on the basis of some particularly prominent sign or symptom. Histological study has revealed nothing definite as to the differentiation of simple ulcer. There is always a non characteristic chronic inflammation of varying extent and localization. The author is especially opposed to the term 'elusive ulcer' which is applied by American writers to changes that are localized predominantly in the submucosa. He states that there is no fundamental difference between the parenchymatous cystitis of Nitze and the elusive ulcer of Hunner. In both lesions there is the same non specific chronic inflammation which appears at one time predominantly in the mucous membrane and at another time chiefly as a submucous infiltration. The diagnosis can be made only by exclusion. Tuberculosis and syphilis must be ruled out first. A characteristic sign of simple ulcer, which occurs most frequently in women, is the unchanged appearance of the rest of the mucous membrane. Another significant feature is the disproportion between the slight objective finding and the generally very severe subjective symptoms, the chronicity of the ulcer and the resistance of the lesion to all methods of treatment.

The treatment should be conservative. With sufficient patience it usually results in permanent recovery. Good results are achieved with oil treatment (collargol gomenol) of the bladder. For resistant cases electrocoagulation is recommended.

In the discussion of this report BRAASCH stated that the elusive ulcer develops from a circumscribed focus of infection in the bladder wall and involves

predominantly the submucosa. In contrast to simple ulcer the involvement of the mucosa is secondary. On cystoscopic examination the picture is normal at first except for a few red spots. A typical finding is sensitiveness of the bladder on overdistention and when the slightly reddened areas are touched with the cystoscope. The cause of the condition is believed to be a hematogenic bacterial infection. In treatment by electrocoagulation caution is necessary because of the deep site of the diseased area. Better results are achieved by direct cauterization through the open bladder.

NECKER said that most of the disease pictures discussed must be considered due to the same causes. As the ulcer usually forms after the subsidence of diffuse signs of irritation and the spontaneous healing of multiple ulcers the term ulcerative cystitis is preferable even though the mucous membrane shows barely any inflammatory changes in the later stages.

SUTER reported that the histological examination of an excised ulcer which had existed for twenty years revealed only degenerative changes in the blood vessels. Accordingly it cannot be claimed that the disease is of an inflammatory nature in all cases.

PRAETORIUS stated that the callous ulcer and the ulcer at the mouth of the ureter are not rarely transition stages in a severe exfoliative trigonitis. Even though these ulcers cannot be identified with the simple ulcer a relationship between the two disease pictures cannot be denied. Praetorius reported a case in which circumscribed exfoliative foci of inflammation at times assumed a pronounced ulcerative character. In one resistant case, irrigations with presojod proved of value.

JACOBY said that a diagnosis of simple ulcer should always be preceded by very careful clinical and roentgenological examinations as often aside from lues and tuberculosis various causes (adnexa prostatica etc.) underlie the condition.

FRUNENBERG recommended arsenic therapy. In the cases of two female patients with elusive ulcer he obtained a good result with intragluteal injections of solarsol.

RUBRITSKY stated that in his opinion the simple ulcer should be differentiated from the elusive ulcer.

СОВКАЛЬ (Z)

Macalpine J B. Papilloma of the Bladder. *Brit Med J* 1929 21 794

The author believes that all papillomata of the bladder if left to themselves have a tendency to become malignant although there is a period of time when they are definitely not malignant. There is considerable difference of opinion among pathologists as to the diagnosis in sections made from these tumors. Tumors regarded by pathologists as simple have frequently recurred as malignant growths.

Macalpine has seen two tumors in the same bladder, one of which was apparently benign and the other malignant.

The diagnosis of papilloma of the bladder is made of course by means of the cystoscope. As it depends entirely upon the experience of the operator and as the treatment is extremely important and depends entirely upon the opinion of the examining urologist the outcome is problematical.

The author watches these tumors very carefully desiccates them first and depends entirely upon the results, under close observation, to determine whether the neoplasm is malignant or non malignant. He believes that a tumor which disappears under diathermy through the cystoscope is probably non malignant as diathermy seems to aggravate malignant tumors. This method of course has its disadvantages because it is possible that the tumor may become inoperable while it is being watched. However, if it does not recede promptly Macalpine does not delay in adopting open operative treatment. He recommends cystography to ascertain the size of the tumor and the degree of involvement of the bladder wall.

He finds that bladder tumors are frequent in persons who work in the dye industries. The most common situation of papillomata is near the vesical orifice. Occasionally papillomata in this region are secondary to papillomata of the upper urinary passages. The treatment is diathermy and open operation. The operation performed by Macalpine is based on Squier's technique. In this procedure gauze dissection of the lateral aspects of the bladder is done and the peritoneum is stripped off the fundus. The dissection may be continued down until the prostate and seminal vesicles are exposed. The bladder is not opened until it is well freed. The neoplasm is removed with a generous area of the bladder wall. If necessary a portion of the ureter is sacrificed and the ureter implanted into the bladder at another location. The latter procedure carries with it a much higher immediate mortality.

The raw surfaces are protected with tetra- and awabs soaked in a 1:1000 solution of silver nitrate and the wound is sponged out with a 1:1000 solution of silver nitrate and 50 per cent resorcin or alcohol. In Macalpine's experience papillomata arising high on the bladder wall run a very benign course while those at or near the ureters or internal sphincter are much more apt to be malignant.

In conclusion the author says that cases of painless hæmorrhage from the bladder should be subjected to immediate cystoscopic examination.

FILMER HESS M D

Beer E. Total Cystectomy and Partial Prostatectomy for Infiltrating Carcinoma of the Neck of the Bladder. *Ann Surg* 1929 88 864

In cases of infiltrating carcinoma of the neck of the bladder the author has found the most favorable treatment to be total cystectomy and partial prostatectomy with implantation of the ureters into the skin of the iliac fossa performed in one stage.

He reports eight cases treated by total cystectomy with one operative death. The one death occurred

in the hospital ten days after the operation from pyelonephritis due to the implantation of the ureters into the sigmoid. Of the seven patients who survived one lived for five years, one for nine months and one who had a leiomyosarcoma for more than two months. Four are still alive. Of these one was operated upon four years ago, one a year and a half ago, one seven months ago and one six months ago.

In conclusion Beer states that the mortality of extraperitoneal removal of the bladder with the adjacent prostate is not prohibitive and that the operation can be done with the implantation of the ureters into the skin in one stage without undue risk to the integrity of the kidneys. In spite of the inconvenience of an apparatus for collection of the urine the patients are rendered fairly comfortable and able to get about and even to work. Even though the local metastases will probably result in death the operation is justified by the temporary comfort.

J EDWIN KIRKPATRICK, M.D.

GENITAL ORGANS

Haendel M. The Physiology of the Testicle (Contribuciones a la fisiologia testicular) in *Fac de med Univ de Montevideo* 19 9 XIV 1930.

Experiments were carried out on dogs and rabbits to determine the relation of the function of the testicle to the body weight, the basal metabolism, the blood pressure and the composition of the blood. The protocols of the experiments are given.

Ligation of the excretory ducts of the testicle was done according to the method of Boin Ancel and Steinach. It caused an increase in weight which continued after castration. This increase after vasoligation was brought about by a general good condition and improvement in the appetite and the function of the organs. In rabbits the basal metabolism increased 15 per cent after vasoligation and was lowered by castration. Glycemia generally decreased after vasoligation but in two animals the decrease was preceded by a period of hyperglycemia. The blood pressure fell after vasoligation but sometimes showed a slight increase immediately after the ligation. In some of the dogs the ligation caused an increase in the erythrocytes and hemoglobin of the blood.

AUDREY G. MORGAN, M.D.

Bevan A. D. The Operation for Undescended Testis. *Ann Surg* 1929 xc 847.

The author describes his operation for undescended testis which was first reported in 1899. After more extensive use and only slight modifications of the procedure during the past thirty years he concludes that this method which is based upon simple clear definite anatomical physiological and surgical principles has given results which warrant its general adoption.

Undescended testicle occurs in about 1 of 500 males. However there is a not infrequent condition of undescended testicle in which the scrotum is very rudimentary and empty and the testicles can be

felt just beneath the skin above the scrotum. In such cases the testicles can be pushed down into the scrotum by gentle pressure. As the child grows the testicles grow and assume a normal position in the scrotum giving the impression that undescended testicles have come down in the period of puberty. Operation is contra indicated in these cases.

The operation for undescended testicle should be performed at an early age within the first three or four years because the structures are then more pliable the testicle can be brought down without tension as the cord is more easily lengthened, the blood supply is more easily safeguarded and if the testis is left in the abdominal cavity it will not develop.

The author emphasizes that in his operation the spermatic vessels are divided only in very rare cases and that the pursestring suture which is placed at the neck of the scrotum does not surround the cord but lies in front of it leaving ample room for the cord behind it.

The details of the operation are described fully. In order to lengthen the cord sufficiently to place the testicle in the scrotum without tension, Bevan first frees the peritoneal vaginal process from the cord facilitating the dissection by injecting normal saline solution under the peritoneum to lift it from the cord and then divides the tiny fascial bands along the vas and the vessels so as to leave only the vas and vessels intact. By this procedure the cord is lengthened several inches.

J EDWIN KIRKPATRICK, M.D.

MISCELLANEOUS

Dragonas E. G. The Mechanism of Certain Cases of Retention of Urine (Etude sur le mecanisme de quelques cas de retention d'urine) *J d'urologie med et chir* 1929 xxviii 341.

The author believes that many cases of retention of urine are caused by physiological phenomena exaggerated in one direction or another, there is no pathological reflex. In support of this theory he cites the cases of retention in which after prostatectomy the patient is able to urinate vigorously. Before the operation in such cases the bladder was not paralyzed, atrophied or degenerated and had not permanently lost its contractility because of a mechanical obstacle it had simply been in a condition of inertia it had been inhibited and as soon as the prostate was removed it regained its normal function.

This inhibition is a process by which an act in the course of development is arrested or suppressed by an opposite influence. There is a normal reciprocal genitovesical inhibition and rectovesical inhibition. Urination and ejaculation cannot take place at the same time nor can urination and defecation. These are normal physiological phenomena which have no relation to the function of the testicles or prostate but depend solely on innervation.

Chronic constipation, hypertrophy of the prostate, hydatic cysts of the pelvis, massage of the prostate, retroversion of the uterus, and various causes may bring about retention of urine simply through irritation acting on the sympathetic parasympathetic or cerebrospinal nerves. Jaboulay makes use of this principle in his treatment of essential incontinence of urine which consists in the injection of artificial serum into the retrorectal space. He says that it partially inhibits the bladder through the sensory fibers of the rectum. **AUDREY G. MORGAN, M.D.**

Waring T. P. Can Solid Material by Reflex or Antiperistalsis Enter the Pelvis of the Kidney from the Bladder? *J. Urol.* 1929 xxi 541

The author reports a case proving that a foreign body may reach the pelvis of the kidney from the bladder by antiperistalsis.

Fourteen months prior to coming for examination the patient, a male, had introduced a piece of grass into the urethra for sexual excitation and had been unable to extract it. On several previous occasions he had used beans, straw, or grass. The symptoms for which he sought treatment were pain in the right upper quadrant of the abdomen and the right costo-vertebral region, fever, nausea and vomiting.

His temperature was 100 degrees F. The urine was alkaline and contained pus and blood. The white cell count was 16,800 with 93 per cent polymorphonuclears.

Cystoscopic examination revealed redness about the right ureteral orifice. In the urine from the right kidney there was a faint trace of indigocarmine and the phenolsulphophthalein return after fifteen minutes was 3.5 per cent. In the urine from the left kidney there was moderate coloration with indigocarmine and the phenolsulphophthalein return was 18.0 per cent. The urine from the right kidney yielded *staphylococcus aureus* on culture and showed pus in clumps on microscopic examination. The urine from the left kidney yielded no bacterial growth on culture and was free from pus.

X-ray examination revealed an irregular line in the region of the right kidney suggesting a calculus. Ureterography showed the right ureter to be dilated and irregular. The pelvis of the right kidney did not appear abnormal.

By means of pyelolithotomy the author removed from the right kidney a calculus 2.5 cm long and 0.2 cm in diameter which consisted of a calcium and phosphatic deposit on a piece of seed-bearing grass. Several days after the operation another piece of grass 1 cm long was drained out on the dressing.

Waring cites the experimental work of Graves and Davidoff proving the occurrence of regurgitation of urine from the bladder into the pelvis of the kidney. Since according to Gruber the urine in the bladder is alkaline in most cases of cystitis the author concludes that reverse peristalsis might easily be provoked by the entrance of the alkaline urine into the ureter. **J. SYDNEY RITTER, M.D.**

Gunning R. E. and Nelson R. J. Actinomycosis of the Urinary Tract. *Surg., Gynec. & Obst.* 1929 xix 352

The authors review briefly nine cases of actinomycosis primary in the kidney which have been recorded in the literature and report two cases of their own.

Actinomycosis is a parasitic disease which in cattle is known as lumpy jaw. It frequently attacks the urinary tract of man but as a rule the involvement of the kidney and ureter is secondary. When the process is apparently confined to the kidney, pyelonephritic abscess is likely to occur. The authors have been unable to find any record of involvement of the bladder.

The disease is recognized by the discovery of the typical granules (ray fungi) in the urine, pus or tissues. The clinical course, physical findings and urological evidence suggest renal tuberculosis or renal tumor. Anemia is an important sign. The diagnosis is rarely made before operation. The history often establishes the possibility of actinomycosis as contact with diseased animals (especially cattle) can be ascertained.

The prognosis is very grave since in cases with secondary involvement the disease is so widespread as usually to be fatal, and when the kidney is involved primarily it is usually well advanced when treatment is begun.

In cases of primary involvement of the kidney nephrectomy is the best procedure when applicable. X-ray treatment and the use of potassium iodide and copper sulphate are recommended but are only adjuncts to surgical drainage and removal of the affected organ. **THOMAS F. FINEGAN, M.D.**

Goldstein A. E. and Abeshouse B. S. Perivesical Perivascular and Periprostatic Suppurations. Review of the Literature and a Report of Cases. *Surg., Gynec. & Obst.* 1929 xix 417

This article discusses particularly the development of infection in the various spaces about the bladder and prostate after operation. The authors give first a brief description of the anatomy and topography of the aponeuroses and the spaces they enclose.

ANATOMY AND TOPOGRAPHY

The pelvic fascia. The pelvic fascia is made up of a parietal and a visceral layer. The parietal portion is continuous with the psoas and iliac fascia and attached to the promontory of the sacrum and the ischiopectineal line. As it passes down over the posterior pelvic wall it covers the pyriformis muscles and the sacral and pudendal plexuses. Laterally, it covers the obturator internus. At the white line of the fascia it divides into two layers. The more external layer is the obturator fascia which forms the outer wall of the ischiorectal fossa. The inner wall of the ischiorectal fossa is lined by the ischioanal fascia, a part of the parietal layer of the pelvic fascia. The obturator fascia is continuous across the anterior part of the pelvic outlet with the corre-

sponding fascia of the opposite side and forms the deep layer of the triangular ligament.

The inner or visceral layer, sometimes described as the "rectovesical fascia," is a continuation of the pelvic fascia. It is a membranous diaphragm separating the pelvic cavity above from the perineum below. It passes downward and inward on the upper surface of the levator ani muscles and then over the surface of the prostate, seminal vesicles, bladder, and rectum.

In recent years the term rectovesical fascia has been restricted to the portion of the fascia between the rectum and bladder which encloses the seminal vesicles.

In the posterior part of the pelvis the visceral layer of the pelvic fascia is pierced by the rectum and reflected upon the rectum as the rectal or pre-rectal fascia.

As the visceral layer passes inward from the white line on either side it covers the posterior surface of the bladder and at the base and sides of the bladder turns upward to form the lateral true ligaments of the bladder. At the juncture of the bladder and prostate it splits into two layers, one of which passes up over the bladder as the vesical fascia and the other of which passes downward over the prostate, forming the anterior lateral and posterior periprostatic fasciae. At the apex of the prostate the prostatic fascia becomes continuous with the deep layer of the triangular ligament and is continued forward as two bands the anterior true ligaments of the bladder.

The true capsule of the prostate is a fibromuscular membrane which surrounds the entire gland except at its base and apex where the urethra pierces the gland. It is continuous on its internal aspect with the fibromuscular stroma of the gland and on its external aspect with the fibromuscular tissues that unite the periprostatic capsule with the periprostatic sheaths or aponeuroses and the cellular spaces. The firmness and integrity of this capsule limit the extension of suppurative processes within the gland.

The prostate is closely surrounded on all sides by fascial sheaths. On the basis of their anatomical relation to the prostate these have been classified by Averseng as (1) the anterior periprostatic aponeurosis or fascia (2) the lateral periprostatic aponeurosis or fascia (3) the posterior periprostatic aponeurosis or fascia and (4) the median aponeurosis (part of the triangular ligament).

The anterior periprostatic fascia. This fascia which carries the names of Denonvillier, Zuckerkandl and Delbet extends from the anterior surface of the bladder to the lower border of the posterior surface of the pubis. Laterally it blends with the aponeuroses of the levator ani and posteriorly it fuses with the prevesical fascia of Charpy. Its width is scarcely more than 1 cm.

The lateral periprostatic fascia. The lateral periprostatic fascia also known as the puborectal fascia of Denonvillier is rather intimately connected to the prostate by loose connective tissue. It is

essentially an extension of the fascia of the levator ani and is composed of a horizontal and a vertical portion continuous with each other. The horizontal portion blends below with the superficial layer of the triangular ligament and above is continuous with the inferior border of the levator ani muscle. The vertical portion is almost quadrilateral and extends from the side of the symphysis pubis to the region of the rectum and levator ani. It extends from the anterior perineal fascia down to the deep layer of the triangular ligament.

The posterior periprostatic fascia. This fascia described by Denonvillier as the "prostatopentoneal fascia" and now commonly known as the "fascia of Denonvillier" covers the posterior portion of the prostate, seminal vesicles, and bladder. Posteriorly, it fuses with the subperitoneal tissue of the rectovesical cul de sac and anteriorly it is inserted into the muscular sheath of the membranous urethra just below the apex of the prostate. Laterally, it blends with the fascial elongations of the levator ani and fascia recti. It is a firm dense sheath which is thickest in the midline and is composed of an anterior and a posterior layer. The anterior layer is the thicker and the more resistant of the two.

The median fascia. The median fascia represents the inferior layer of the triangular ligament the stronger and more resistant of the two layers of which the triangular ligament is composed.

These fascial sheaths on the upper lower and lateral aspects of the prostate gland inclose a potential quadrangular space about the prostate which is designated by the French as *la loge prostatique*. The intrafascial spaces are in front the anterior periprostatic space on the sides the lateral periprostatic space and behind the posterior periprostatic space. The extra aponeurotic spaces are situated behind the periprostatic aponeuroses and consequently are found behind the spaces mentioned. They are in front, the anterior extraprostatic space or the space of Retzius laterally the superior pelvic space and behind the posterior extraprostatic space or pre-rectal space.

The anterior pre-cucal space. This space is commonly called the space of Retzius and is the most frequent site of localized postoperative infections. It is bounded anteriorly by the symphysis pubis and the anterior layer of the transversalis fascia posteriorly by the posterior layer of the transversalis fascia above by fusion of the two layers of the transversalis fascia at the semilunar fold of Douglas below, by the anterior periprostatic fascia, and laterally, by fusion of the two layers of the transversalis fascia with the aponeuroses of the transversalis and oblique muscles.

The space called by Averseng the anterior perivesical space is essentially a continuation of the anterior periprostatic space.

ETIOLOGY

The causes of postoperative perivesical and periprostatic infections may be divided into two groups

(1) exacerbations after operation of an old pre existing lesion of the bladder prostate seminal vesicles or urethra and (2) the introduction of an infecting agent at the time of operation or during the post operative course

Chronic cystitis is usually accompanied by perivesical infiltration of varying degree often known as "chronic sclerosing pericystitis." In old cases of prostatic retention the chronic infection of residual urine which lies dormant may flare up following instrumentation. Other possible causes of perivesical suppuration are vesical calculi, foreign bodies, ulcers, tumors, diverticula, and tuberculous. In old cases of retention repeated instrumentation with resulting trauma is attended with the danger of causing a false passage or tear in the urethral wall which provides an excellent portal of entry for the pathogenic organisms found in the bladder and urethra in such cases. An abscess may exist within the hypertrophied prostate unrecognized until the bladder or prostate is opened for the removal of the prostate believed to be enlarged. Such an abscess may rupture spontaneously into the posterior urethra or it may break through the prostatic capsule giving rise to a peri-prostatic cellulitis. If the cellulitis is confined to the posterior periprostatic space it may form a firm mass which may be confused with an enlarged prostate.

TYPES OF INFECTION

Mild postoperative perivesical and periprostatic suppurations occur within a relatively short time after operation and are usually due to flooding of the prevesical space with infective material at the time of operation or to inadequate drainage after operation. The severe type of inflammation is of insidious onset occurring after the suprapubic wound has closed or when a small clean healing fistula is present. Signs of infection about the wound are absent but the patient is toxic, suffers from fever which is often accompanied by chills, is easily fatigued, loses weight and appetite appears anxious and if the sepsis persists later becomes prostrate. Pain is a constant symptom. It may be in the suprapubic or bladder region or may be referred to the perineum. Bladder and gastro-intestinal symptoms with nausea and vomiting may develop. This type of infection usually leads to fatal septicæmia.

PATHWAY OF INFECTION

The possible routes by which localized lesions may be spread into the tissues surrounding the operative field are (1) by direct extension by cellular infiltration, (2) by way of the lymphatics and (3) by way of the blood stream.

Direct extension. Direct extension occurs as the result of flooding of the space of Retzius with infected urine at the time of operation or as the result of inadequate drainage of this area and the bladder after operation. Prolonged stasis of urine in the space of Retzius may lead to inflammatory lesions varying from mild suppuration to extensive abscess formation with necrosis and gangrene of the tissues.

Lymphatic route. The rôle of the lymphatics in the propagation of inflammation about the prostate and bladder following operation is most important. The lymphatic drainage determines the ultimate destination or direction of such infections. In the region of the neck of the bladder there is an anastomosis of the lymphatics of the vas deferens with those of the prostate, posterior urethra and bladder. The ureter has an abundant network of lymphatics in its muscularis and external fibrous sheath. The lymphatics of the kidney are abundant and surround the tubules and glomeruli. There is a close relation between the lymphatic supply of the genito-urinary system but there is no anastomosis between the lymphatics of the genito-urinary organs and the rectum.

Blood stream. There is no clinical evidence to show that infection is carried from one part of the urogenital tract to another by direct vascular connections.

RELATION OF OPERATIVE PROCEDURE TO INFECTION

The nature of the infection introduced at or following operation varies with the type of operation performed. Opening a bladder which is distended with urine or has been filled with fluid before operation increases the danger of infection about the base of the bladder. The likelihood of the development of cellulitis appears to be greater after a suprapubic prostatectomy than after a simple cystostomy on account of the greater trauma produced by the former operation. Infection after prostatectomy is favored also by the dead space created by the removal of the enlarged prostate. This space is constantly filled with stagnant and infected urine and unless it is well drained constitutes an excellent nidus for the growth of pathogenic organisms. The danger of periprostatic or perivesical infection following perineal prostatectomy appears to be more theoretical than actual as in this operation adequate drainage is provided. In cases in which partial or complete excision of the bladder is done the floor or base of the bladder is usually involved and the accumulation of infected urine in the operative area is likely to set up a diffuse cellulitis. Peri-prostatic or perivesical suppurations may develop also after instrumentation of the urethra, the insertion of retention catheters into the bladder, a punch or cutting operation at the neck of the bladder and operation for prostatic abscess with incomplete drainage.

LOCALIZATION OF INFLAMMATORY PROCESS

The site of localized suppuration following operation on the bladder and prostate depends on the origin of the infection and its avenue and manner of spread. The localization of suppurations around the prostate is closely related to the anatomical relations of the prostate and its surrounding cellular spaces. The micro-organisms usually found in perivesical and periprostatic infections are the staphylococcus, streptococcus and colon bacillus.

Inflammatory collections about the prostate and the base of the bladder are essentially of three types (1) intrafascial, occurring in any one of the various spaces between the prostatic capsule and the different periprostatic fasciae (2) extrafascial, occurring in the spaces external to the periprostatic fascial planes and (3) distant suppurations, the result of extension of the inflammation by way of the blood stream or lymphatics or by direct continuity from the focus of infection in the operative area. The condition varies from a localized abscess within the fascial spaces about the prostate and bladder to a diffuse cellulitis in the extrafascial planes. Lesions of the latter type are essentially phlegmons which may spread to distant regions (kidney, thigh, groin, or perineum) and point more or less to an abscess.

Intrafascial infections. The development of an inflammatory lesion in the anterior periprostatic space is relatively rare as the anterior lobe of the prostate is seldom the site of infection. However, an infection of the space of Retzius may spread down into this region. The lateral periprostatic space is seldom if ever the site of a localized inflammatory lesion before or after operation. Infections in this region are difficult to recognize. Following suprapubic prostatectomy the posterior periprostatic space is frequently the site of an unsuspected abscess as the dead space in the bed of the prostate is an excellent focus for the development of infection which may spread by direct extension.

Extrafascial infections. Suppuration within the anterior extraprostatic space (the space of Retzius), is the most frequent local complication following operations on the bladder and prostate by the suprapubic route. It should properly be called an abscess or phlegmon of the space of Retzius and not a periprostatitis. As a result of infection in this area, the pubic bone may be involved and undergo necrosis. Occasionally an infectious process in the space of Retzius responds poorly to treatment or is neglected in which case a hypogastric or iliopectineal infiltration develops.

The lateral extraprostatic space is commonly described as the superior pelvicretal space and corresponds to the whole lateral surface of the prostate. While this space is seldom the site of primary postoperative infection it frequently represents the fusion place of suppurations extending from the space of Retzius, the anterior or posterior spaces. The diagnosis of suppuration within this space is confirmed by a palpable mass involving the lateral and upper surfaces of the prostate and seminal vesicles.

Suppurations within the posterior extraprostatic space are of frequent occurrence before and after operation because of the tendency of the suppurations of the prostate and seminal vesicles to spread into the posterior periprostatic space and then to pierce the fascia of Denonvillier into the prerectal space. These infections tend to open into the rectum and become clinically cured but in some cases they may point lower down as an ischioanal abscess or

may spread upward under the peritoneum, forming a retroperitoneal suppuration.

Distant suppurations. Anteriorly, infections within the space of Retzius may spread over the entire abdominal wall involving the hypogastric, the inguinal, or the lumbar region but are amenable to treatment.

Laterally, suppurative lesions about the bed of the prostate or the posterior urethra develop as the result of infection in the dead space of the prostatic bed after removal of the gland. The infection spreads to the superior pelvicretal space and thence into loose subperitoneal space extending in all directions.

Posteriorly, suppurations within the periprostatic space may extend up to the retrovesical region in an upward or lateral direction under the peritoneum. If the peritoneum is pierced a true pelvic peritonitis results. Retroprostatic and retrovesical suppurations may become walled off and traverse the prerectal space to empty into the rectum.

In most of the types of postoperative infection described the spread of the infection is by extension along fascial planes but occasionally the development of a subperitoneal abscess of the hypogastric, iliac, inguinal, lumbar or kidney regions is dependent upon a lymphatic extension. There is also the possibility of extension along the length of an organ traversing an infected area such as the vas deferens and the ureter, the infection being carried by the lymphatics accompanying the organ through the loose cellular tissues surrounding it or through the lumen of the tubular structure.

PREVENTION AND TREATMENT OF POSTOPERATIVE INFECTIONS

Essential to a well planned and well executed suprapubic cystotomy and prostatectomy are good exposure and proper incision of the bladder and careful closure of the suprapubic wound with adequate drainage. In the stripping of the peritoneum from the bladder great care should be taken in order to avoid the formation of a retroperitoneal dead space and unnecessary trauma to the neck of the bladder. As a landmark for the lower limit of exposure of the bladder the superior border of the pubic bone should be used. In a simple cystotomy the incision should not be carried too far down toward the neck of the bladder and as a rule should not be longer than 3 cm. Flooding of the operative field at the time the bladder is opened must be prevented by careful packing off of the prevesical space or the introduction of a cannula with or without suction before the bladder is opened. In the closure of the abdominal wound adequate drainage of the space of Retzius must be provided. This drainage is best obtained by introducing a gauze wick at the lower end of the wound and closing the incision around it loosely. The suprapubic tube should be brought out at the upper end of the bladder incision.

Even when these preoperative precautions are taken there may occasionally develop signs of infection in the various areas about the bladder and

prostate When such signs are noted, treatment should not be delayed. The prevesical space should be drained immediately by opening and irrigating the lower angle of the incision. Occasionally it may be necessary to resort to perineal drainage. When a suprapubic prostatectomy has been done the bed of the prostate may be the focus of infection. When this is the case the drainage should be of the type used in the typical perineal approach to the prostate. One or more drains should be passed through an opening in the prostatic capsule into the bladder and the bed of the prostate. In cases of secondary suppurations developing at sites remote from the bladder the primary focus of infection must be found and eradicated before the secondary suppurations can be relieved. Therefore the prevesical space should be re-opened and thoroughly explored for evidences of retropublic infection.

CLAUDE D. HOLMES M.D.

Chabanier H, Lobo Onell C, Lebert M and Lelu E. Water and Salt Diuresis (Contribution à l'étude des diurèse aqueuse et saline). *J d urol méd et chir* 1929 XXVII 359.

The authors review Ambard's work and the threshold conception of the elimination of urinary substance. In their experiments details of which are given in tables they found there was always a change in the p^H coincident with a rapid change in water diuresis. Polyuria is accompanied by a change of p^H in the alkaline direction whereas a sudden decrease of water diuresis is accompanied by a change in the acid direction. However while any sudden change in water diuresis is accompanied by a change of p^H in the urine a change of p^H does not necessarily cause a change in diuresis at once. A change in diuresis seems to require a certain

degree of change in p^H fasting for a certain period of time. Staining tests have shown that the reaction in the renal cells is the reverse of that in the urine.

From these facts and a further comparison of water diuresis and diuresis caused by naptal insulin and other substances the authors conclude that the conception of change in threshold is really based on a change in iso-electrical points. A sudden change in the iso electrical points of the albumins of the tubules toward a low p^H results in a discharge of cations through the urine with retention of anions in the tubule cells, shown by the decrease in the urine of one of the most important anions Cl^- . The acids contained in the tubule cells diffuse to the glomeruli causing an increase in the acid of the capsular albumins which brings about an increase in the osmotic tension of the cells of the capsule and polyuria.

Therefore what has been called mobility of the threshold is only the reverse of the mobility of the iso electrical point of an albumin. To say that a substance has a certain threshold of excretion is to say that a value of the iso-electrical point of the albumin which eliminates it has been reached at which this albumin begins to take up the substance in appreciable quantities. Accordingly in place of the abstract notion of the threshold we have a concrete and measurable property of albumin namely its iso-electrical point. The threshold is a property of the kidney and not of the substance excreted nevertheless it must still be expressed by comparing the amount of the substance in the blood with that eliminated in the urine.

The authors conclude also from their work that the behavior of the Cl^- threshold in edema is only a secondary factor in the pathogenesis of that condition.

ALFRED G. MORGAN M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Hume J B The Causation of Multiple Exostoses
Brit J Surg 1929 xvii 236

Multiple exostoses occur in both sexes. The subjects are usually of less than normal stature because of deficient growth of the long bones. Certain bones, such as the carpus, tarsus, vertebrae, sternum, and skull, are never affected. The condition is often hereditary although a history of inheritance is not always obtainable. It has a definite association with multiple enchondromata, but a definite association with rickets has not been established.

The most common types of multiple exostoses are the globular or cauliflower-shaped projections appearing at the extremities of the long bones. The projections may also take the form of elongated spikes in which case they are always directed away from the epiphysis. Not infrequently, they occur near secondary centers of ossification such as the gluteal ridge of the femur and the vertebral border of the scapula.

Up to the twentieth year of age, multiple growths are usually covered by a thin layer of cartilage. The cancellous bone underlying the surface cartilage is excessively spongy and fragile and in the roentgenogram shows definitely irregular trabeculation.

The exostoses are most numerous and best marked in the areas where normally the greatest growth of the bone takes place, as in the upper end of the tibia and the lower end of the femur.

With regard to the cause of these bone formations the author says: "It is clear that such a complicated condition as multiple exostoses cannot be produced by a mere failure in tubulation or by a vascular disturbance, but that as Keith originally suspected the cause must lie in the abnormal behavior of the cells of the growth disk and the consequent failure of the subperiosteal bone formation to keep pace with it. An abnormal stimulus affecting the center of the disk alone and interfering with the process of ossification would produce an enchondroma, one affecting a localized portion of the periphery a single pedunculated exostosis, while a more general stimulus affecting the growth disks of all the long bones would produce multiple exostoses."

FREDERICK A JONES M D

Phemister D B Chronic Fibrous Osteomyelitis
Ann Surg 1929 xc 756

Chronic fibrous osteomyelitis is a term which may be applied to any long standing pyogenic infection of bone in which the reaction on the part of the fibroblasts in contrast to the infiltrative cells is the outstanding feature of the lesion. This may be

the end stage of acute pyogenic osteomyelitis in which suppuration, necrosis, absorption, and cavity formation have occurred. As repair takes place the cavity may be filled with fibroblastic tissue showing varying degrees of maturation. In some cases such an area of chronic fibrous osteomyelitis may remain symptomless for an indefinite period. In others it may produce mild disturbances or may be the site of acute exacerbations. There is usually more or less osteosclerosis with the formation of a bony shell about it. Gradual replacement by hematopoietic and fatty marrow may ultimately come about.

In contrast to this condition there is a form of osteomyelitis, pursuing a chronic course from the onset in which a circumscribed area of bone is broken down by fibroblastic activity and the space is filled up with soft tissue. This lesion deserves special consideration since, by the time it comes to operation it is devoid of the usual microscopic changes of pyogenic infection and bears considerable semblance to benign giant cell tumor and osteitis fibrosa cystica.

Phemister has studied eleven cases of the last type, particularly from the pathological standpoint. The findings in this condition vary greatly according to the age of the lesion. In cases which are operated upon during the first few months while the disease is progressive the cavity is found filled with a soft tissue varying from grayish to brown, consisting microscopically of fibroblasts, capillaries, polyblasts, giant cells, old hemorrhage and blood pigment and usually showing more or less necrosis. Cholesterol shits are sometimes seen. There is practically no leucocytic or lymphocytic infiltration. The response on the part of the surrounding bone is extremely variable. In some instances little or no bone is laid down while in others there is marked new bone formation.

The author concludes that these lesions are produced by organisms of low virulence belonging to the pyogenic group but not setting up the usual cytological reaction of pyogenic inflammation.

H EARLE CONWELL M D

Gannon C L Experimental Sarcoma of Bone
Arch Surg 1929 xix 794

A spontaneous transmissible endothelioma of the chicken was introduced into the marrow cavity of the tibia of the chicken to cause the formation if possible of a tumor similar to that described by Ewing as an endothelial myeloma and in order that the development and manner of growth of such a tumor might be watched. The resultant neoplasm resembled in some respects both the endothelioma and the osteogenic sarcoma seen in man.

Like the endosteoma, it occupied a large part of the shaft and was osteolytic until it had penetrated by way of the nutrient foramen or through the cortical spicules to the subperiosteal space. While it was confined between the periosteum and the cortex the tumor cells formed radiating spicules of bone. In a similar experiment the Rous fibrosarcoma also formed bone beneath the periosteum.

Fully two thirds of the course of the tumor had been run before the neoplasm became palpable or visible in the roentgenogram although it was present in all of the bones examined on the fourth day. By the twenty second day the chickens had died with widespread metastases. Two died of a metastasis before the tumor could be demonstrated by palpation or the roentgenogram.

It is shown that under certain physical and chemical conditions both endothelial (or reticular) cells and fibroblasts are capable of differentiating into osteoblasts. **FREDERICK A. JOSTES, M.D.**

Fitchet S. M. Cleidocranial Dysostosis Hereditary and Familial. *J Bone & Joint Surg.* 1929 xi 838.

The author reviews the literature on cleidocranial dysostosis and reports seven cases.

The features of the condition as originally described by Marie and Santon are (1) more or less marked aplasia of the clavicles (2) exaggerated transverse diameter of the cranium (3) delay in the ossification of the fontanelles and (4) hereditary transmission.

The literature reports cases which showed the cleidocranial dysostosis but no hereditary relation ship.

Garrahan and Schinell reported four cases in one family. One of the subjects was the father. One of the children had a positive Wassermann reaction.

Dentition is frequently disturbed. According to Hultkrantz all parts of the cranium are involved in the deformity, but the most characteristic finding is the disturbance of the suture formation in the vault of the cranium. The individual bones may fail to unite and the fontanelles may remain open. The base of the skull shows incomplete ossification of the symphyses and a reduction of the longitudinal diameter. The facial skeleton may also be affected. The individual bones are smaller than usual. The nasal and lacrimal bones are either absent or only very slightly developed. The accessory cavities are narrow or practically absent. The palate is high and narrow. The teeth break through the gums late and show faulty implantation or defective coating of enamel.

Jansen attributed the condition to pressure of the amniotic fluid on the embryo due to small size of the amnion. He stated that a large anterior fontanelle, complete or partial absence of the clavicles, shortening of the toes and bilateral flattening of the chest are common to all cases.

Marie and Santon stated that the disease had never been known to run for more than two generations, but McCurdy and Baer reported nine cases

occurring in three generations. There seems to be no variation in the basal metabolic rate or the metabolism of calcium or phosphorus.

Nothing definite is known as to the cause. The condition occurs with equal frequency in males and females and may be transmitted by either the father or the mother to either sons or daughters. Lues plays no part in its causation or transmission. As a rule there is little if any pain or disability demanding treatment. **ANTHONY F. SAWYER, M.D.**

Swaim L. T., and Kuhns J. G. The Prevention of Deformities in Chronic Arthritis. I The Upper Extremity. *J Am M Ass.* 1929 xcii 1533.

The deformities following chronic arthritis are more serious than any other feature of the disease. The essentials in their prevention are (1) immediate attention to the joint to prevent deformity as soon as the diagnosis of arthritis is made (2) the prevention at all times of positions leading to deformities (3) well controlled application of heat to the joint and exercise of the joint (4) motion encouraged but never forced, in all stages of the disease and (5) immobilization of the joint in the desired position during sleep.

Deformity of the shoulder can be lessened by placing the patient's hands under his head with the flexed elbows stretched out on the bed. This can be done several times a day unless the arthritis of the shoulder is too acute in which case the arm should be held by pillows in 90 degrees of abduction and full external rotation. The same position can be maintained in the ambulatory patient by an airplane splint at intervals for a few weeks. External rotation and abduction are to be desired. If ankylosis is inevitable the position of choice is with the arm in 70 degrees of abduction from 30 to 45 degrees of forward flexion and rotation midway between pronation and supination.

The elbow is frequently involved in arthritis. The first symptom is pain on full extension or full flexion. The usual deformity is a position of flexion with inward rotation and pronation of the arm and hand. At night the arm should be kept in full extension in a plaster gutter and during the day full use of the elbow should be encouraged. A stiff elbow is most useful when it is in a position in which the hand can reach the face that is at an angle of less than 90 degrees. Traction splints for flexion or extension are indicated in convalescence. Manipulation of the elbow usually does more harm than good.

The usual deformity of the wrist and hand is one of flexion of the wrist, pronation of the hand and ulnar deviation of the fingers. This can be prevented best by the use of a metal or plaster cock up splint to be worn especially at night. Dorsiflexion of about 30 degrees is desirable if any deformity of the wrist is to result. Subluxation of the thumb and flattening of the palmar space of the hand can be avoided by incorporating a palmar support in the cock up splint and by using a wrist band with a strap about the base of the thumb.

Deformities of the fingers are very serious. They can be prevented by an extension of the cock up splint to hold the fingers in flexion or extension as may be indicated. Exercise during the day with temporary splinting is better than constant immobilization. Occupational therapy should be started as soon as the soreness of the fingers has decreased sufficiently to permit it.

Muscle weakness and atrophy are common in arthritis. They are due to disuse deformities, and stiffness resulting from inflammation. The lack of muscular tone in women at the menopause is helped by glandular therapy. The most important treatment of weak flabby muscles is carefully controlled exercising well within the fatigue limit.

CHESTER C. GUY, M.D.

SURGERY OF THE BONES, JOINTS MUSCLES, TENDONS, ETC

Sorrel E. The Indications for and Results of Osteosynthesis in the Treatment of Pott's Disease. (Indications et résultats des ostéosyntheses dans le traitement du mal de Pott.) *J. de chir.* 1929, **xxix**, 439.

There are two reasons why it is hard to determine the value of osteosynthesis in Pott's disease. The first is that the disease varies so greatly in severity that unless the surgeon is able to follow up a large number of patients for a long time his judgment will depend upon whether his cases happened to be mild or severe. The second is that it is still rather uncertain whether the operation has merely the palliative mechanical effect of immobilizing the diseased spinal column or a biological curative action.

In the cases of children the operation is generally not indicated as a cure can usually be effected by non-operative treatment. The operation is at least unnecessary and might interfere with future growth. In the cases of adults osteosynthesis represents a true advance in the treatment of Pott's disease. The contra-indications are serious tuberculous lesions in other parts of the body, a too pronounced gibbus and poor condition of the skin. Some surgeons are of the opinion that, in the absence of these contra-indications, the operation should be performed as soon as the diagnosis is made, while others believe that mechanical orthopedic and general treatment should be given until the lesion is reduced to a quiescent condition in which the chances for a successful result are better.

There are two chief methods of osteosynthesis, that of Albee in which a graft from the patient's tibia is used and that of Hibbs in which small lamellæ are cut from the laminae of the vertebrae and turned up and down to form a solid column of bone along the sides of the spinous processes and the processes themselves are then broken so that they lie against each other, forming another column of bone. The Hibbs operation is much more complicated than the Albee procedure and is employed much less frequently.

In the last ten years the author has performed osteosynthesis in many cases of Pott's disease and has re-examined or received reports regarding 106 patients. The result was excellent in 60, good in 21, mediocre in 9 and poor in 16. Sorrel concludes that a procedure which enables 56 per cent of persons with Pott's disease to lead an absolutely normal life (some of them doing very hard work), 19 per cent to lead an almost normal life with only slight precautions and 84 per cent to work a part of the time is by far the best method of treating Pott's disease in adults.

AUDREY G. MORGAN, M.D.

FRACTURES AND DISLOCATIONS

Boland F. K. Gas Gangrene in Compound Fractures. *Ann. Surg.* 1929, **xc**, 693.

The complication of compound fractures by gas gangrene in civil life is more frequent than is generally realized. In colored patients treated at the Emory University Division of the Grady Hospital Atlanta in the period from 1922 to 1929 its incidence was 19 per cent and in white persons treated in the same hospital during the same period its incidence was 7 per cent.

Gas gangrene occurs in wounds of the lower extremities more frequently than in those of the upper extremities, probably because of the proximity of the lower extremities to soil infection and because of the relative tightness of the muscles about the tibia as compared with the muscles of the forearm. Woolen goods probably harbor the micro-organisms as frequently as soil.

The symptoms of the disease are variable. Frequently the first symptom is a rise in the pulse rate to from 110 to 120. The temperature is variable. The leucocyte count is usually between 15,000 and 20,000. The patient may complain that the dressing is too tight.

Boland advises that compound fractures be put up in apparatus which allows frequent inspection of the wound and that smears and cultures be made from the wound. Wide debridement with excision of all damaged tissue should be done. Of the different types of after treatment Boland has found the Carrel-Dakin technique to give the best results. On the first appearance of signs of extension of the disease further debridement or, better, a high amputation should be done. On Boland's service, all patients with compound fractures and other wounds in which gas gangrene might develop are given polyvalent anaerobic antitoxin in addition to tetanus antitoxin. The prophylactic dose is 50 c.c. and the therapeutic dose from 100 to 200 c.c. Fifteen cases are reported.

FREDERICK A. JOSTES, M.D.

Boehler L. The Treatment of Fractures of the Os Calcis. (Behandlung der Fersenbeinbrüche.) *Chir. wtz.* 1929, **1**, 733.

The usual crush fracture of the os calcis is caused by a vertical force acting on the foot from above.

The weight of the falling body is transmitted to the os calcis through the astragalus. The body of the astragalus is more solid than the os calcis and is protected by the tibia and fibula, particularly on the external aspect where the external malleolus covers the cuneiform process of the astragalus. The latter is forced into the spongiosa of the os calcis and separates its lateral portion. The posterior joint surface of the os calcis is usually split obliquely from its inner aspect to its anterior surface. The sustentaculum tali with the median portion of the posterior joint surface usually remains *in situ* whereas the lateral portion is sometimes forced downward. The broken os calcis is markedly broadened and shortened and the tuberosity of the calcaneus is elevated.

In the treatment advocated by the author, the calcaneal shortening is corrected by extension with a nail or pin in the longitudinal axis of the calcaneus and the broadening of the bone is corrected by lateral compression with a screw press. To fix the corrected position a plaster of Paris bandage is applied while the bone is under extension. Depending upon the severity of the destruction the extension is continued for from three to six weeks. At the end of that time the plaster of Paris bandage and the nail are removed and a new plaster of Paris cast suitable for walking is applied for from nine to fourteen weeks. If the cast is removed too soon the astragalus will again sink into the still soft spongiosa of the calcaneum and the calcaneal tuberosity will again be forced upward.

By this method of treatment the author has obtained good functional results. After from three to six months the patients were able to return to their work.

In the last three years Boehler has seen fifty three fresh and forty one old calcaneal fractures. Twelve were bilateral. Barely 10 per cent had been diag-

nosed before the patient's admission to the hospital. An important aid in the diagnosis is the angle between the joint and the tuberosity. Between a line joining the anterior portion of the calcaneus and the posterior joint surface and a line passing through the upper border of the calcaneal tuberosity there is normally an angle of from 27 to 33 degrees. In fracture of the calcaneus this angle is decreased or disappears because of the elevation of the calcaneal tuberosity. The determination of this angle in a lateral roentgenogram is important particularly in the diagnosis of old fractures. To determine the position, an axial roentgenogram of the calcaneus is of value. ZILMER (Z)

ORTHOPEDICS IN GENERAL

Mount W P. Hodgkin's Disease. An Orthopedic Problem. *J Bone & Joint Surg*, 1929 xi, 61

Blount states that skeletal involvement in Hodgkin's disease is much more common than has been realized. In cases in which the bones have been carefully studied hyperplasia and degeneration of the bone marrow have been found. Penostitis and even tumors have occasionally been reported as secondary manifestations of the disease. Destruction of the vertebral bodies has simulated tuberculosis and given rise to a transverse myelitis.

The author reports a case in which involvement of the spine and left shoulder preceded generalized lymph gland enlargement by two years. Diagnosis of tuberculosis and of malignant tumor were made the true nature of the disease not being revealed until autopsy was performed. The report is supplemented by roentgenograms and photomicrographs. Deep X-ray therapy was of considerable benefit in this case and in some of the cases reported in the literature.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Van Allen C M and Hrdina L S Air Embolism from the Pulmonary Vein A Clinical and Experimental Study *Arch Surg* 1929 xix 567

Air embolism from the pulmonary vein may complicate surgical procedure on the lung. As the venous pressure in the pulmonary circulation is ordinarily less than that of the atmosphere air will be drawn into the circulation when a pulmonary vein is opened. A sharp distinction must be made between the embolism resulting in such cases and the embolism in which air enters a peripheral vein such as the jugular or subclavian. In the former the air enters the peripheral arteries and may involve every organ and tissue whereas in the latter it passes into the pulmonary arteries and exerts its effects on the lesser circulation and the right side of the heart.

The exact distribution in the vascular tree of the air received into the pulmonary veins was studied by the authors in dogs under varied conditions of dosage and body position. It was found that air entering the circulation by way of the pulmonary vein followed the course of the blood stream in general but with uneven distribution. Instead of being divided among the vessels in amounts according to the sizes of the vessels it tended to float on the blood and to seek the upper parts of the body. Even when the stream was rapid the air and blood failed to mix thoroughly. Sometimes the air remained stationary in a bend of the vessel and sometimes it passed in the direction opposite to that of the blood. Accordingly there were marked variations in the distribution of the air in different positions of the body. When the dog was in the vertical position with the head up the head, neck and forelegs received all of the air except a slight amount in the coronaries. When the head was down the trunk and hind legs received the air and the coronaries were heavily involved. In the dorsal recumbent position in which the arch of the aorta was higher than the descending portion of that vessel and acted as a trap to hold a large part of the air more than half of the air was distributed to the head and forelegs while the rest went to the coronaries and the vessels of the ventral part of the body.

In man the symptoms of air embolism from the pulmonary vein are of two types: neuromuscular and cardiovascular, depending upon the position of the body. In the vertical position with the head up the neuromuscular type predominates. In the same position with the head down the symptoms are of the cardiovascular type. In the recumbent position both types are present. The fatal effects are due to impairment of cardiac activity by obstruction of the

coronary arteries of cerebrum and medullary function by blockage of the vessels of the brain and of blood circulation by blockage of the pulmonary arteries. The last condition is not frequent.

Aside from the symptoms the diagnosis may be made from the initial elevation of the blood pressure and air bleeding, i.e., the presence of air bubbles in the blood obtained by making a stab wound in the most elevated part of the body.

The prognosis depends on the size of the embolus, severity of the symptoms and time interval.

The occurrence of air embolism from an external fistula of the pulmonary vein may be prevented by positive pressure breathing and the injection of epinephrin or ephedrin but the protection lasts only while the blood pressure remains above certain levels. Spontaneous embolism from a bronchovascular fistula may be prevented by the intravenous injection of epinephrin or ephedrin and by bronchial block. Treatment is not very satisfactory. It consists of artificial respiration with the body in the head down position. Cardiorespiratory stimulants have no effect.

SAMUEL PERLOW M D

Cole G H Pain as a Guiding Symptom in the Injection Treatment of Varicose Veins *Brit M J* 1929 ix 843

The author draws attention to the phenomenon of secondary pain—delayed pain—following the injection of varicose veins with sodium salicylate-saline solutions. The pain begins about twenty seconds after the first few drops of the solution enter the vein, reaches its maximum in about sixty seconds and subsides usually completely in two or three minutes. This is in contrast to the pain which may occur immediately after the injection is begun and indicates perivenous extravasation.

By noting the severity and distribution of the pain it may be possible to prophesy with considerable accuracy the extent of the endovenitis which will follow. Using pain as a guide it is possible to distribute the injected solution over a considerable distance by elevating the limb or placing it in a horizontal or dependent position. The pain decreases in severity as the fluid in its passage becomes more dilute. Wherever pain is felt sclerosing changes inevitably follow, and where pain is not felt it is uncommon for more than a local thrombosis to occur.

JACOB M. MORA M D

Anderson W and Gray J Report of a Case of Aneurism of the Splenic Artery with References to Fifty Eight Cases Collected by the Authors *Brit J Surg* 1929 xvii 267

The case reported was that of a woman forty nine years of age who died in collapse following an

agonizing abdominal pain. Autopsy revealed a saccular aneurism of the splenic artery with an opening into the lesser peritoneal cavity. The aneurism was false, for in the sac, which was the size of a cherry, there was a $1\frac{1}{2}$ in opening from the main splenic artery close to the hilus of the spleen. Microscopic study showed that the chief causes of the aneurism were degeneration and necrosis in the media. There was no evidence of atheroma, generalized arterial disease or syphilis but the findings suggested that the underlying condition was a subacute infection.

In the fifty-eight cases collected by the authors the symptoms varied from those suggesting peptic ulcer or carcinoma of the stomach to those suggesting ruptured tubal pregnancy. In most cases they indicate an acute abdominal condition with hemorrhage.

Surgery offers the only hope of cure.

JOHN H. WOOLSEY, M.D.

BLOOD, TRANSFUSION

Moll H. On the Transfusion of Blood through a Fine Needle. *Brit J Surg* 1929 xiv 321

The author describes a very ingenious apparatus for use in the transfusion of citrated or defibrinated blood. It consists essentially of a pear shaped container which drains at the pointed end and a two way stopcock to which a syringe is attached on one side and a needle on the other. There is also a

heated holder in which the pear shaped container may be carried. With this apparatus Moll uses French's needle which has a point with three facets and a conical stem.

The pear shaped container allows blood to be more safely given under pressure. The two way stopcock makes it possible in finding the vein to withdraw blood into the syringe and then by turning the stop to give the blood without loss and without the danger of dislodging the needle from the vein. When all of the blood has been given the stop is turned back the injection of air being thereby avoided.

JOHN H. WOOLSEY, M.D.

LYMPH GLANDS AND LYMPHATIC VESSELS

Freeman L. Chronic Non Specific Enlargement of the Mesenteric Lymph Nodes As Related to Surgery. *Ann Surg* 1929 xc 618

Chronic non specific enlargement of the mesenteric lymph nodes is a common condition and frequently is the only lesion that can be discovered in laparotomies on children and young adults. Pathologically it is only a simple hyperplasia.

The author suggests that influenza acting through the vascular system may be responsible. The symptoms are indefinitely gastro intestinal in character. A low grade persistent fever is often present. The frequently neurotic temperament of the patients is ascribed by Freeman to irritation of the autonomic nerve filaments.

NATHAN N. CARMEL, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Hartwell S W Surgical Wounds in Human Beings A Histological Study of Healing with Practical Applications 1 Epithelial Healing Arch Surg, 1929, xix 835

From his studies of the healing of surgical wounds Hartwell draws the following conclusions

The living cells of normal human epithelium are potentially amoeboid cells

In the healing of wounds the covering with epithelium takes place through the amoeboid movement into the wound of cells from the surrounding epithelium Such moving cells form an 'extension membrane' The process of covering with epithelium is completed by the union of two such membranes from opposite sides of the wound followed by rearrangement and multiplication of the cells of the membrane

Mitosis occurs secondarily to cellular movement and late in the process of healing

The majority of the cells which form the extension membrane are derived from the prickle cell layer of the old epithelium

A basal cell layer is formed under the epithelial outgrowth by a rounding up and slugging of the lowermost cells of the membrane rather than by the outgrowth of cells from the old basal layer

The prickle cell of the normal epithelium is therefore capable of becoming the basal cell in the epithelium of the scar and must be considered the primary cell in the regeneration of epithelium in the healing of wounds

The formation of the healing epithelial membrane is dependent upon a supporting base suitable for the movement of epithelial cells

The base available for the support and advance of the epithelial membrane is the chief factor determining the time and place of the union of the epithelium from the two sides of the wound

The rate of cornification of cells of the membrane is also a determining factor in the rate of the process of covering with epithelium

The chief causes of delayed epithelial healing therefore are the existence of a supporting wound surface unsuitable for the progression of epithelial cells and rapid cornification of the cells of the membrane due to an inimical chemical or physical environment These conditions are accentuated in infected wounds

Any beneficial effect of a particular method of dressing wounds may be referred to its action in producing a more suitable base or a more suitable environment in which the epithelial cells may grow out normally

Mackenzie J R The Etiology and Prophylaxis of Postanæsthetic Sickness Lancet 19 9 ccxvii 1299

Mackenzie believes that surgical technique has outstripped anæsthetic technique and that some of the delay in postoperative convalescence and even some of the postoperative mortality may be assigned to the effects of the anæsthetic and its administration He contends that the anæsthetist must accept more responsibility for the surgical patient both before and after anæsthesia

There are four outstanding factors which predispose to postanæsthetic sickness the psychic element the pre operative preparation, the anæsthetic and its administration, and surgical trauma

Mental phenomena are factors throughout the conscious, subconscious and unconscious states of anæsthesia as well as in the pre-operative and post-operative periods The effect of apprehension, fear, dread or anxiety regarding the operation or the anæsthetic is underestimated Expression of the emotion during the pre anæsthetic period reduces the postanæsthetic effects while repression increases them Emotional stimulation of the suprarenal glands causes depression of gastro intestinal function and an abnormal breaking down of liver glycogen with resulting hyperglycæmia and glycosuria

Pain controls the psychic element to a remarkable degree, as is evidenced in obstetrics emergency work and painful surgical conditions Examination and encouragement by the anæsthetist previous to meeting the patient in the anæsthetic room help to maintain equanimity There are various indications of nervous stimuli reaching the brain during the surgical procedure which show that nerve excitement and exhaustion can continue throughout surgical anæsthesia Vomiting during the subconscious period of the return to consciousness is due to the influence of the anæsthetic on the medullary centers or to the stimuli reaching the cortical cells Novocain infiltration of the operative area protects against the latter Rapid de etherization seems to increase the frequency of vomiting while the patient is on the table and to decrease it thereafter

Pre operative preparation is overdone A mild aperient forty eight hours before operation is sufficient The use of castor oil or magnesium sulphate shortly before the operation is definitely harmful Enemata are unnecessary and detrimental except in special cases They are potent factors in the causation of postanæsthetic nausea, vomiting tympanites and paralytic ileus Inanition should be prevented by giving food, especially carbohydrates up to within a few hours of operation Lack of carbohydrates causes incomplete oxidation of fats with a resulting ketosis which is an exciting factor of post

anæsthetic vomiting Mackenzie believes that the repose and indifference resulting from a preliminary hypodermic injection of morphine outweigh any possible disadvantages the injection may have

Postanæsthetic sickness is most frequent after some form of ether anæsthesia. During ether anæsthesia the suprarenals are stimulated and liver glycogen is broken down in excess with resulting hyperglycæmia which is followed in the postanæsthetic period by exhaustion of the residual epinephrin and depletion of body glycogen, with potential hypoglycæmia and ketosis. The duration and depth of anæsthesia have an important bearing upon postanæsthetic sickness. Incipient anoxæmia is a dangerous factor which should be prevented by supplying sufficient oxygen. De-etherization should be accomplished by hyperventilation with carbon dioxide.

Surgical trauma should be reduced to the minimum by careful handling of tissues. The patient should be assured of a night's rest before operation by the use of veronal or bromides. The administration of 1 oz of glucose, 1 gr of aspirin and 1 dr of potassium bromide in $\frac{1}{2}$ pt of water by rectum on the patient's return to bed is a valuable aid in the prevention of postanæsthetic sickness. Small doses of pituitrin (0.25 cm) at intervals of one hour also seem to be beneficial. E. S. PLATT M.D.

Huffman L. D. Solution of Acacia and Sodium Chloride in Hæmorrhage and Shock. Effects of Intravenous Administration. *J Am M Ass* 1929 XLIII 1698

The intravenous administration of colloidal solutions in combating the effects of hæmorrhage or shock was introduced by Hogan who advocated the use of a gelatin solution. During the world war Bayliss reported the non-toxicity of an acacia and sodium chloride solution. Later Keith demonstrated the beneficial effects of a solution of acacia and sodium chloride combating hæmorrhage and shock in animals. The Mayo Clinic on the suggestion of Keith has made a study of this solution and now advises its use in selected cases of surgical shock.

The author reports observations on a series of more than 300 cases of the effects of the intravenous administration of acacia and sodium chloride. The great importance of care in the preparation of the solution is emphasized. The method used by Osterberg is advised for routine clinical use. In over 200 of the cases reviewed an increase in the blood pressure occurred which was progressive with the volume of the solution administered. A rise of from 30 to 40 per cent in from one to eight minutes has been noted. There was a greater corresponding increase in the systolic pressure than in the diastolic pressure. The blood pressure was well maintained following the injection. In general the pulse rate decreased and there was improvement in the volume and the quality of the pulse. In postoperative surgical shock, the respiration became slower and deeper and the peripheral cyanosis decreased with the improvement

in the circulation and the elevation of the blood pressure. Although less satisfactory than transfusion there was found to be some decrease in the coagulation time after the injection. No injurious effects on the kidneys were noted, but in some cases the urinary output was increased. There were no apparent harmful chemical changes in the blood. Several hours after the injection the blood was slightly more viscid. No alteration was noted in the blood grouping. It was found that the acacia and sodium chloride remained in the blood for an average of six days. Autopsy findings in twenty cases failed to show any evidence of damage to the tissues which could reasonably be ascribed to the infusion.

CLARENCE V. BATMAN M.D.

ANTISEPTIC SURGERY. TREATMENT OF WOUNDS AND INFECTIONS

Klassen P. Chronic Traumatic Oedema of the Dorsum of the Hand (Ueber das chronische traumatische Handrückenödem). *Monatsschr f Unfallheilk* 1929 XXXVI 289

The author discusses the clinical picture which was first described in 1901 by Secretan on the basis of two observations as oedema duri et hyperplasie traumatica du metacarpe dorsal. The cause is usually blunt force which is often slight. Less frequently it is sharp injury without infection. The swelling is usually very painful. It appears at once or after an interval of several days. The oedema usually ceases abruptly at the wrist only occasionally extending slightly onto the forearm. The swelling over the bones of the hand is often movable. A similar condition has been observed on the dorsum of the foot. Occasionally the roentgenogram shows bony atrophy. The picture is generally characteristic. In the differential diagnosis phlegmon of the hand, tuberculosis of the carpus and metacarpus, blue oedema (Charcot), trophoneurotic oedema and artificial oedema must be ruled out.

The author reports seven cases.

The nature of the condition is unknown. Treatment has no effect. The course is prolonged. Hospital care for five or six months is of no benefit.

E. GLASS (Z)

ANÆSTHESIA

Peterson R. Report of an Explosion of Ethylene Gas Resulting in the Death of a Maternity Patient and Her Child. *Am J Obst & Gynec* 1929 XLIII 659

The accident reported by the author occurred in the case of an unmarried mentally deficient primigravida sixteen years of age. In the second stage of labor, because of the strength and frequency of the pains and marked bulging, ether in slight amounts was given until the arrival of a regular hospital anæsthetist to take charge of the ethylene-oxygen anæsthesia which for some months had been employed in obstetrical cases.

The mixture used in a McKesson apparatus was 25 per cent ether and 75 per cent oxygen. It has been the practice to ask the patient to breathe deeply three times at the beginning of a pain. The mask is then removed from the face and the patient urged to bear down. In the latter part of the second stage, when the head is extended over the perineum it is customary to increase the amount of ethylene and decrease the proportion of oxygen until practically complete anesthesia is produced. The explosion occurred after the fourth or fifth administration of the mixture before the proportions of the ethylene and oxygen had been changed.

The explosion occurred at approximately 10 30 p.m. It was violent and loud enough to be heard throughout the four story maternity building. The anesthetist was partly blown from her chair but escaped serious injury. The gas machine was seen to be on fire but the flames were promptly extinguished by means of a blanket.

Immediately after the explosion the patient cried out and attempted to rise to a sitting posture on the delivery table. After resuming the recumbent position she went into opisthotonus, began coughing up large quantities of foamy blood and became unconscious. Almost immediately after the accident her neck and face became greatly swollen and distorted by marked emphysema. The heart beat was at first fairly strong but gradually became weaker until death occurred at 11 00 p.m.

Warthin's autopsy findings were as follows: traumatic death ethylene explosion during anesthesia for childbirth; multiple lacerations of lower trachea, great bronchi and parenchyma of lungs; massive hemorrhages throughout the lungs; interstitial emphysema of the upper half of the body; fatty degenerative infiltration of the liver; subpericardial fatty infiltration with moderate right sided cardiac dilatation; lipoidosis of the adrenals; edema of the meninges and brain.

At an investigation of the cause of the explosion the following facts were recorded:

1. The rubber pneumatic face cushion was missing but there were the remains of the celluloid hood under the collar which normally holds it attached to the metal parts of the face inhaler.
2. The breathing tube 4 ft long with a coil of wire running through from one end to the other showed three definitely punched out places where the rubber had previously been in continuity.
3. On top of the head of the mixing valve the circular glass window which measured about 1 3/4 in. in diameter had been blown out. The fine glass from this window was thrown to the ceiling by the force of the explosion.
4. The bottom of the rebreathing chamber was blown out together with the rubber glove fastened to this part of the chamber and used for rebreathing purposes.
5. A streak within the lumen of the breathing tube about 1/4 in. wide appeared to extend from one end to the other.

The author concludes that it seems best for the present at least to return to the use of nitrous oxide oxygen and ether given by the drop method.

He states that a return to simpler methods of anesthesia will enable the student to be instructed better in general anesthesia and make it possible for the surgeon to control anesthesia or at least to keep in close touch with the anesthetist during the administration of the anesthetic.

The open mask administration of ether is best for analgesia and anesthesia in the second stage of labor.

In obstetrics complicated methods of anesthesia should not be taught to undergraduates or interns. The simple methods will be more useful for deliveries in private homes where about 80 per cent of deliveries still occur.

F. L. CORNELL, M.D.

Sise L. F. Spinal Anesthesia for Abdominal Operations. *N. York State J. M., 1929 xxx: 1182*

In the past, spinal anesthesia was associated with considerable danger but recent improvements have greatly increased its safety. Its advantages are extreme relaxation, contraction of the intestines and quiet respiration, all of which facilitate abdominal exposure and manipulation. Its disadvantages are vascular depression, the impossibility of extending or shortening the narcosis and nausea. Headache, paralysis, and trophic disturbances are usually only temporary. The mortality varies but the author believes it is about 1 death in 3,000 cases.

Sise induces spinal anesthesia with a solution called spinoan which is lighter than the spinal fluid. He combats vascular depression by selecting the patient carefully, administering fluids and glucose and using epinephrin just before the induction of the anesthesia. If the depression advances and the blood pressure drops to two thirds the normal, the patient is placed in the Trendelenburg position and epinephrin is given.

The author has used spinal anesthesia in 700 cases with 1 death. He believes that when it is induced by an experienced anesthetist it is the anesthesia of choice for abdominal operations.

GEORGE R. McAVITT, M.D.

Christ A. Percain: A New Local Anesthetic Derived from Chinolin. (Ueber ein neuartigen Lokalanästhetikum aus der Chinolinterreihe Percain). *Nar. Kose u. Anesth. 1929 ii: 161*

Percain, a complex derivative of chinolin, has been used in the induction of anesthesia in more than 500 cases. It has a marked effect, causing anesthesia of the conjunctiva of rabbits in dilutions of 1:10,000. The anesthesia lasts longer than that produced by any other known local anesthetic. All forms of anesthesia may be obtained with it. A dilution of 1:2,000 has the same effect as novocain of the usual strength. The average duration of the anesthesia is 10-15 hours.

The vasodilating effect may be counteracted by adding 10 drops of adrenalin to 50 c.c. of the solu-

tion to be used Percain has hardly any untoward effects Healing of the wound is not disturbed by it Spinal anesthesia is induced with 4 c.cm. of a 1:1000 solution Percain is especially valuable for surface anesthesia It is as potent as cocaine and much less toxic It may be employed in cases of painful ulceration In tenesmus due to inflammation of the bladder its effect is especially marked In painful carcinoma it has a good effect when used as a paste Its antiseptic properties may be of value in the healing of wounds

A. BRANCK (Z)

Zerfas L. G. and McCallum J. T. C. The Clinical Use of Sodium Iso Amyl Ethyl Barbiturate
Anes & Anal 1929 viii 349

Sodium iso amyl ethyl barbiturate injected intravenously in a 10 per cent solution is capable of controlling essentially any type of convulsion and of alleviating pain in certain conditions not responding to routine therapeutic procedures It has been used also in combination with other general or local anesthetics for the induction of anesthesia The amount given usually ranged between 0.5 and 1.0 gm. (from $7\frac{1}{2}$ to 15 gr.) and did not exceed 1.5 gm. ($22\frac{1}{2}$ gr.) at any one injection

When used in amounts of 1.0 gm. (15 gr.) in combination with nitrous oxide and oxygen it has usually reduced the amount of nitrous oxide required from 10 to 50 per cent

It eliminated most of the undesirable effects experienced in anesthesia induced with ether and prevented the postoperative occurrence of nausea, retching and vomiting

It is a safeguard to the life of the patient when given prior to the use of procaine and cocaine

The preparation of patients for operation with sodium iso-amyl ethyl barbiturate bears out Lundy's theory concerning balanced anesthesia The brunt of the anesthesia is not carried by any single agent but is placed partly on the preliminary medication and partly on the local anesthetic

The authors believe that sodium iso-amyl ethyl barbiturate will prove to be useful when employed in the amounts recommended and when used for a definite reason Its administration in combination with other general or local anesthetics should be done only by persons who are thoroughly familiar with the methods and principles of anesthesia It is a valuable therapeutic agent and adjunct to anesthesia

JOHN J. MALONEY M.D.

PHYSICO-CHEMICAL METHODS IN SURGERY

RADIUM

Martin H. E. Factors In Dosage Determination In Interstitial Radiation. *Radiology*, 1929 XIII 338

The factor determining the dosage in interstitial radiation is the tissue dose or the quantity of radiant energy reaching all parts of the tumor. It is therefore considered that the tissue dose of any mass is measured by the smallest quantity of energy which any portion receives. The goal which should be striven for in accurate dosage is the smallest tissue dose sufficient to cause the death of all neoplastic cells within the tumor. In order to deliver that intensity to all parts of the tumor it is essential to know the minimum lethal dose. Unfortunately, however, no means of predetermining the minimal lethal dose of a neoplasm is yet known. The only biological unit of radiation at the present time is the skin erythema dose which is subject to so many interpretations that it can never be sufficiently definite.

It is admitted that accurate dosage is not possible in practice. At the present the best results are obtained by interstitial overdosage. Overdosage in radiation is fairly comparable to the sacrifice of widespread normal tissue in surgical procedures. Dosage determination in interstitial radiation is largely empirical and will probably always remain so because of the numerous factors which are involved. These factors are:

1. The size of the lesion. Lesions less than 2 cm in diameter present practically no problem as several times the lethal dosage may be used without disadvantage even in radioresistant lesions. In the treatment of larger tumors the problem becomes more difficult. A mass 4 cm in diameter would require 40 mc and a mass 8 cm in diameter 176 mc. The latter dosage is out of the question, being far beyond the limit of safety. The dosages indicated by diameters of the lesion are given by the author in a table. Interstitial radiation is not suitable for tumors of any very great size.

2. The shape and contour of the lesion. Since the radiations from an implant are emitted practically from a point source the zone of any given intensity is spherical. The action of a group of neighboring implants is the sum of the adjacent or coalescing spheres around each implant. It is an error to consider that a number of irregularly placed implants are mutually benefited in their individual zones of action. Consequently it is of advantage to consider all masses to be treated by interstitial radiation either as spheres or a combination of spheres. A slightly irregular mass is considered a sphere with a diameter equal to the longest axis of the mass in question. A flat and more irregular mass

is considered a combination of adjacent or overlapping spheres.

3. The radio-sensitivity of neoplasms. The quality which is responsible for radiosensitivity in a neoplasm is unknown. However, as radiosensitivity seems to depend upon the differentiation of the tumor from the embryonic form Broder's classification serves as an index. Frequently clinical identification is sufficient for accurate outlining of the treatment. Many lesions are amenable to biopsy, but opinions differ regarding the justification of this procedure.

4. Tolerance of the adjacent normal tissue and the effect on the whole organism of a lessened function of this tissue. It is unsafe to go beyond certain limits in certain localities. For example, it is unsafe to irradiate the tongue or the floor of the mouth with more than 40 mc. On the other hand, the breast and limbs tolerate larger doses well. The oesophagus does not tolerate small doses well.

5. The tolerance of the organism as a whole. Doses of 100 mc of interstitial radiation noticeably affect the general health. There may be a fall in the red blood count and hemoglobin due largely to the direct effect of the radiation upon the blood cells, and partly to toxemia. If massive doses of interstitial radiation are given to exposed ulcerated lesions, convalescence can be made shorter and more comfortable by excising or cauterizing the condemned mass after a five to ten day period of interstitial radiation. At the end of ten days 84 per cent of the radon has been destroyed. By this removal of condemned tissue larger doses may be made tolerable.

6. Variation in the physical characteristics of the implants. The elimination of beta rays by the use of filtered implants has greatly improved interstitial therapy. Implants having a filter of 0.3 mm of gold eliminate 97 per cent of the beta rays. Greater dosage of the penetrating gamma radiation is permitted by the use of filtered implants. As it is impossible to place implants exactly in their theoretically correct position it is necessary to overdose in order that the lethal dose may be delivered to all parts of the tumor. In general it is well to place implants within the outer third of the radius of the sphere of tissue they are intended to radiate. When so placed they will radiate the sphere as efficiently as if placed in its center.

7. Previous radiation or intended external radiation. Each succeeding failure to radiate a neoplasm completely renders the next attempt more difficult because of lessened tolerance and a lessened power of regeneration on the part of the local normal tissue. External radiation can practically always be combined with interstitial radiation to good advantage.

A. JAMES LARSEN, M.D.

tion to be used. Percain has hardly any untoward effects. Healing of the wound is not disturbed by it. Spinal anesthesia is induced with 4 c cm of a 1:1,000 solution. Percain is especially valuable for surface anesthesia. It is as potent as cocaine and much less toxic. It may be employed in cases of painful ulceration. In tenesmus due to inflammation of the bladder its effect is especially marked. In painful carcinoma it has a good effect when used as a paste. Its antiseptic properties may be of value in the healing of wounds.

A. BREYER (2)

Zerfas L. G. and McCallum J. T. C. *The Clinical Use of Sodium Iso Amyl Ethyl Barbiturate*. *Anes & Anal* 1929 VIII 349

Sodium iso-amyl ethyl barbiturate injected intravenously in a 10 per cent solution is capable of controlling essentially any type of convulsion and of alleviating pain in certain conditions not responding to routine therapeutic procedures. It has been used also in combination with other general or local anesthetics for the induction of anesthesia. The amount given usually ranged between 0.5 and 1.0 gm. (from 7½ to 15 gr.) and did not exceed 1.5 gm. (22½ gr.) at any one injection.

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It is a safeguard to the life of the patient when given prior to the use of procaine and cocaine.

The preparation of patients for operation with sodium iso-amyl ethyl barbiturate bears out Lush's theory concerning balanced anesthesia. The bulk of the anesthesia is not carried by any single agent but is placed partly on the preliminary medication and partly on the local anesthetic.

The authors believe that sodium iso-amyl ethyl barbiturate will prove to be useful when employed in the amounts recommended and when used for a definite reason. Its administration in combination with other general or local anesthetics should be done only by persons who are thoroughly familiar with the methods and principles of anesthesia. It is a valuable therapeutic agent and adjunct to anesthesia.

JOHN J. McLOVEY, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Brandes W W The Effect of Mechanical Constriction of the Hepatic Veins with Special Reference to the Coagulation of Blood *Arch Int Med* 1929 xlii 676

Brandes describes a method of mechanically constricting the hepatic veins in the dog. This procedure permits a study of the changes occurring in the blood following removal of the liver from and its return to the circulation.

Such constriction is followed by a precipitate fall in the blood pressure of from 40 to 60 mm Hg the level then being maintained reasonably constant for twenty minutes or longer.

It causes also a decrease in the concentration of the blood which is followed by a gradual increase until at the end of fifteen minutes, approximately the normal concentration is again reached.

The blood sugar also rapidly decreases during the constriction for fifteen minutes and rises rapidly after release of the constriction.

A definite decrease in the coagulation time of the blood of from 25 to 50 per cent is observed during the constriction and is followed by an increase on release of the constriction.

There is a definite decrease of fibrinogen during the constriction and a definite increase of 25 per cent or more on release of the constriction.

The platelets are slightly decreased during the constriction and show a slight increase on its release.

Changes in the blood calcium can be accounted for by dilution.

The experimental results indicate that the chief factors concerned in the changes in the coagulation time during and after constriction of the hepatic veins are (1) alterations in the antithrombin content (2) an increase in the hydrogen ion concentration and (3) numerical changes in the platelets.

HOWARD A McNICHT, M D

Schumm H The Disease Picture of Juvenile Gangrene (Das Krankheitsbild der juvenilen Gangraen) *Beitr klin Chir* 1929 cxlii 551

The author presents a review of our present day knowledge of juvenile gangrene on the basis of the literature and clinical and pathological studies of eight of his own cases of the condition.

Juvenile gangrene is believed to be becoming more frequent. Schumm discusses its differential diagnosis from arteriosclerosis, diabetic gangrene and syphilis. It differs from senile gangrene, which is usually of sudden onset by its prolonged course.

Clinically there occurs after a usually not characteristic preliminary stage of neuralgic rheumatic

symptoms the syndrome of intermittent claudication. The attacks of pain are very severe. Even when gangrene has begun temporary improvement may occur in the blood supply, but is of short duration. In contrast to senile gangrene juvenile gangrene does not most frequently attack the large toe and the hall of the foot.

Pathologically there is no vascular syphilis, no calcification of the media, and no sclerotheromatosis. The underlying process is related to the so called endarteritis obliterans. As this classification refers only to the coarsest and most striking changes, the author speaks of a "panangitis thrombotica," as the media, adventitia and the veins are also involved. The pathological process is considered a true inflammation.

The etiology is uncertain. Among the factors which play a part in the development of the condition are congenital hypoplasia of the vascular walls, racial peculiarities (the condition is strikingly frequent in Polish Jews), thermic influences, and the use of tobacco. The disease is seen almost exclusively in males. The exciting cause is unknown.

The author does not recommend sympathectomy, as he has never been able to prevent gangrene by this operation. There remains therefore nothing but amputation. In the majority of cases amputation of the leg is sufficient. The amputation should be done aperiosteally.

HILLNER (2)

Schiavone G A Tetany with Continuous Generalized Contracture and Trismus in a Child (Tetania con contracturas permanentes y generalizadas y con trismus en un niño) *Semana méd* 1929 xxi 333

The patient whose case is reported was a boy eleven years of age who had recovered from protracted bilateral suppurative otitis media two years previously and had had congestion of the lungs a year previously. On December 19 1928 without any apparent cause he began to have difficulty in swallowing. On December 21 he began to show rigidity of the legs and to experience marked difficulty in walking. There was no fever. On December 6 he was seen by a physician who gave him potassium bromide.

When he was examined by the author on December 27 he presented the tetanic facies or risus sardonicus and marked bilateral trismus. The masseter muscles were hard contracted and very prominent. There was no facial paralysis, fever, disturbance of deglutition or vomiting. The eyes were normal and the patient experienced no pain when pressure was made on the eyeballs. There were no signs of otitis or mastoiditis. His head was slightly inclined to the right, but there was no torticollis. His arms could

MISCELLANEOUS

Weinbren M. Ultraviolet Radiation in the Treatment of Skin Ulcers *Brit J Radiol*, 1929 11 477

Weinbren records the conclusions he has drawn from his experience with ultraviolet radiation of skin ulcers, gives a brief description of the treatment, and reports the results in seventeen cases of various types

While some of the earliest work with artificial ultraviolet radiation was carried out on lupus, the subsequent employment of ultraviolet light in general treatment soon overshadowed its use in the cure of local lesions

In spite of the recent report of the Medical Research Council that there is no evidence that the ultraviolet ray is of any value in the treatment of skin ulcers Weinbren asserts that he has found it of great value in healing ulcers of widely differing types after direct medical and surgical measures have failed

He classifies the various skin ulcers as follows

1 Those due to organisms (a) pyogenic, (b) granulomatous

2 Those not primarily due to organisms (a) traumatic, (b) due to lesions of the circulatory system and (c) neurotrophic

However much the etiology may differ sepsis is always present and must be cleared up, the epithelial

surface is missing and must be regenerated and the circulation is usually defective and must be stimulated to improve the nutrition of the area

In sepsis Weinbren finds the water cooled lamp almost instantaneous in its effect upon the surface of the infection Cultures taken at intervals from radiated ulcers show that the bactericidal action on the surface of the lesion gradually extends deeper

Stimulation of the blood supply by radiation is proved by the improvement in the color of the area

The following technique has been adopted by Weinbren

1 Radiant heat is applied to increase the flow of lymph to the ulcerated area

2 The lesion is exposed to the water cooled lamp the doses being regulated according to the sepsis of the ulcer a matter to be decided only by an experienced physician and not by a general operator of the lamp

3 The lesion is subjected to mild exposure to the air cooled lamp to produce an erythema in the surrounding skin

Successful as is his method for the treatment of chronic ulcers of the skin and even of certain ulcers of the mucous membrane Weinbren does not suggest that ultraviolet radiation should be the first line of treatment for such lesions He states that in cases of non tuberculous ulcers medical or surgical measures should be tried first

GERTUDE BEARD

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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Head

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be flexed and extended normally and showed no muscle contractures. Extension of the legs was rendered difficult by marked contracture of the posterior muscles of the calves and thighs and less marked contracture of the anterior muscles. There was no opisthotonos. The joints were normal. No external wound was found. Walking was difficult and somewhat spastic. The Wassermann test was negative.

The author prescribed enemata of chloral hydrate and the administration of calcium lactate and hydroxide with adrenalin by mouth. Up to the eighth day the condition continued about the same, but at the end of that time the contractures of the legs began to decrease and finally they ceased entirely. The trismus improved more slowly. The patient was discharged well on the twentieth day. He had then gained 3½ kilos. Trousseau's sign was negative, and there was only a slight trace of Chvostek's sign.

In the author's opinion this was a case of generalized contracture and trismus of the type called by Escherich "pseudotetanus." It was impossible to make electrical examinations or to determine the calcium in the blood quantitatively. Schiavone believes the condition was not tetanus because there was no fever, the outcome was good and there was no external wound and no dysphagia. As a matter of precaution he gave two injections of antitetanus serum of 20,000 units each, but he believes the child would not have recovered if the condition had been tetanus.

AUDREY G. MORGAN, M.D.

Drury, D. R. and McMaster, P. D. The Liver as the Source of Fibrinogen. *J. Exper. Med.* 1929, 1, 569.

The authors conclude that the liver is absolutely essential to the maintenance of the normal quantity of fibrinogen in the blood since in normal rabbits in which regeneration of fibrinogen was stimulated by defibrination of the blood an enormous over pro-

duction of fibrinogen occurred whereas in rabbits subjected to hepatectomy there was a speedy and continuous decrease in the quantity remaining.

W. N. ROWLEY, M.D.

M. Gowan, J. P. Some Points in Regard to the Genesis of Mesoblastic Tumors. *Edinburgh Med. J.* 1929, xxxvi, 645.

In the experiments reported a suspension of coal tar in oil was injected into the peritoneal cavity of chickens. The injection was followed first by the formation of granulation tissue or a granuloma, which in turn was followed by scar tissue formation and in some instances definite fibromata. The author points out that fibroid tumors appear to be of the nature of perverted repair processes.

These "artificial tumors" are compared with other similar tumors. M. Gowan believes that such mesoblastic tumors are tumors within the reticulo-endothelial system, and that metastases in such cases are not true metastases.

PAUL W. GIBBLEY, M.D.

Lumsden, T. Tumor Immunity Treatment by Autovaccination of Implanted Mouse Carcinoma. *Lancet* 1929, ccxvii, 814.

In thirty of fifty-five mice with mammary cancer produced by inoculation the tumor regressed following autovaccination. The autovaccination was brought about by injecting 1 per cent formalin in saline solution into the growth and the tissue around it. The injection was done with a very fine hypodermic needle and very slowly, the attempt being made to distend the tumor without bursting its capsule. The quantity of the solution injected varied from 0.1 to 0.25 cc. The mice cured by the autovaccination showed a high degree of immunity against subsequent implantations of the tumor.

EARLE I. GREENE, M.D.

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INTERNATIONAL ABSTRACT OF SURGERY

MAY, 1930

LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., CHICAGO
Dean, Northwestern University Medical School

WILLIAM STEWART HALSTED AND HIS ACCOUNT OF THE INTRODUCTION OF RUBBER GLOVES IN SURGERY

FREDERICK LEET REICHERT, M.D.
From the Department of Surgery, Stanford University Medical School

DR WILLIAM WELCH'S choice of William Stewart Halsted for the professorship of surgery in the new medical school of the Johns Hopkins University in 1887 was a happy one. Dr Halsted's reputation as an investigator, teacher, and capable surgeon had been made in New York when at the age of thirty-five he was called to Baltimore. Here his activities for another thirty-five years placed his name first among American surgeons in meticulous and finished surgery in careful and trustworthy research and in true teaching.

His was the first American school of surgery in which the pupils were so thoroughly trained after years of apprenticeship¹ that they were quickly called to professorial posts in other medical schools. Clinical problems were taken to the laboratory where he and his associates zealously and carefully endeavored to find their solution. The operating room and research laboratory were of equal importance to the master and his



WILLIAM STEWART HALSTED
(1852-1922)

pupils, and by frequent visits to European clinics Halsted maintained a constant enthusiasm in his department for new principles and new investigations.

His professional career, surgical from the beginning, had its inception in the first decade of the antiseptic era. Lister's principles had found an enthusiastic supporter in Halsted, a fact which added materially to his early surgical prominence in New York. In the early eighties, the German surgeons, von Bergmann (1836-1907), Schummelbusch (1860-), and others replaced chemical sterilization with antiseptics by physical methods of sterilization and thereby introduced the aseptic

era of surgery. Halsted was quick to see its advantages and contributed much to the perfection of this technique.

In his teachings he constantly emphasized the four fundamental principles of modern surgery, namely absolute asepsis, complete haemostasis, gentle handling of tissues and careful approximation of tissues. His ability successfully to employ fine silk in all clean operations may be

¹Halsted, W. S. The training of the surgeon. *Bull. Johns Hopkins Univ.* 1904, 5: 1-270.

ascribed to the application of these principles since the use of silk is dependent upon asepsis of the highest degree in the operating room. It is said that silk tests one's asepsis, and it is significant that his pupils are practically the only surgeons who use silk consistently and invariably at the present time.

Dr. Halsted's introduction of rubber gloves into surgery has been accepted as one of the most important adjuncts to aseptic technique. He describes¹ the first use of rubber gloves in the operating room in the winter of 1889 and 1890, shortly after the opening of the Johns Hopkins Hospital. The nurse in charge of the operating room (who was later to become Mrs. Halsted) complained to him that the solution of mercuric chloride used in sterilizing the hands had caused a dermatitis on her forearms and hands. 'As she was an unusually efficient woman, I gave the matter my consideration and one day in New York requested the Goodyear Rubber Company to make as an experiment two pairs of thin rubber gloves with gauntlets. On trial, these proved to be so satisfactory that additional gloves were ordered. In the autumn on my return to town the assistant who passed the instruments and threaded the needles was also provided with rubber gloves to wear at the operations. At first, the operator wore them only when exploratory incisions into joints were made. After a time the

assistants became so accustomed to working in gloves that they wore them also as operators and would remark that they seemed to be less expert with the bare hand than with the gloved hands.

'I think it was Dr. Bloodgood, my house surgeon, who first made this comment and that he was the first to wear them invariably, when operating. According to Bloodgood's statement in his report on hernia² he began to wear gloves invariably in December, 1896.

It was recommended that rubber gloves be worn by the operator and assistants in the first American book on aseptic surgical technique³ published in 1894 by Hunter Robb, then resident gynecologist at the Johns Hopkins Hospital and therefore in close contact with the technique of the surgical clinic.

It is interesting that the use of rubber gloves in surgery was not the result of an inspiration to eliminate the hands as a source of infection during the operation. Their use was a matter of slow evolution, first as a protection for the hands of the assistants from irritating solutions, then as an added precaution on the part of the operator in exploring joints later as an aid to the operative dexterity of those accustomed to gloves as assistants, and finally as a regular adornment to be worn invariably in all cases clean and septic by the operator and all members of the operating team.

¹Halsted, W. S. The employment of fine silk in preference to catgut and the effect of a sensitive tissue and method in controlling hemorrhage. *Ann. n. surg. et gynecol.* 1890, 11, 101-102. *Perfor. Masses and Relief.* *J. Am. M. Assn.* 1913, 12, April 12, 20-21:26.

²Bloodgood, J. C. Operations on 470 cases of hernia in the Johns Hopkins Hospital from July 1, 1889 to January 30, 1899. *Johns Hopkins Hosp. Rep. Balt.* 390-71.

³Robb, H. *Aseptic Surgical Technique*. 1894. Phila. J. B. Lippincott.

ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HFAD

Ricard A. Traumatic Ruptures of the Lateral Sinus (Des ruptures traumatiques du sinus latéral)
Lyon chir, 1929, xxvi, 476

The case reported was that of a man of thirty-four years who was run over by an automobile truck and brought to the hospital in coma with all of the signs of a basal skull fracture. On the basis of the symptoms of macdriasis and temporoparietal edema a diagnosis of intracranial hemorrhage from rupture of the middle meningeal artery was made, and the next afternoon a trephination was done. A rupture was found at the bend of the lateral sinus. It was tamponed tightly and a drain was left in the lower end of the wound. An attempt to remove the drain at the end of six days was followed by renewed hemorrhage. Another tampon was therefore put in and left until the twenty-first day. The patient recovered with complete deafness on the left side. He noted also a slight decrease in vision although there were no ophthalmoscopic findings. The right side showed no contractures or motor disturbances.

The author has collected sixty-nine cases of injury of the lateral sinus from the literature. In forty-two of them the injury was caused by direct trauma. In thirty-three of the cases of direct trauma a fracture was present. Operation was performed in twenty-one.

In the cases in which the wall is not torn directly by the fracture fragments the rupture is generally at the bend of the sinus and there is peculiar thinness or friability of the wall. When the sinus is ruptured there is progressive hemorrhage between the bone and the dura mater. Less frequently there is also subdural hemorrhage due to a focus of cerebral contusion and rupture of a pial artery or vein. The causes of death are hemorrhage, compression of the brain or infection. The symptoms are those of cerebral compression by intracranial hemorrhage. The two essential signs of cerebral compression from hemorrhage are hemiplegia and stertorous respiration. Temporoparietal edema, dilatation of the pupil and slowing of the pulse may also occur. Between the time of the accident and the appearance of signs of compression there may be a free interval but this is rarer in rupture of the sinus than in rupture of the middle meningeal artery. If the hemorrhage is very copious there may be compression of the cerebellum with a rapid instead of a slow pulse, slow deep respiration instead of Cheyne-Stokes respiration, fever instead of hypothermia and vomiting. It is generally impossible to diagnose the site of

the hemorrhage, but the hemorrhage itself indicates operation. The site of operation can be determined on trephination. In nine out of ten cases tamponade is indicated. As a rule it is simpler and safer than suture. The tampon should be left in for at least two weeks to permit complete healing.

ANDREW G. MORGAN, M.D.

Henri Fischer. Congenital Ante Auricular Fistulae (Considerations sur les fistules congénitales anté-auriculaires). *J de méd de Bordeaux* 1909, cvi, 711.

The fistulae observed by the author were near the origin of the ascending portion of the helix or in front of the tragus. They were small deep fistulae following a rectilinear course practically vertical from 5 to 20 mm in diameter and usually oval. Some of them were situated at the peak of a small eminence.

Congenital ante auricular fistulae are slightly more common in females than in males. They may be unilateral or bilateral. They occur as frequently on the left side as on both sides at once, but on the right side they are extremely rare (one case in forty-five observations). Transmission of the anomaly by heredity is very common.

The fistulae arise from the non fusion of two of the three first cartilaginous eminences or between these eminences and the cranial tegument with invagination of a portion of the epidermis. They therefore have their origin from the first branchial groove.

Exploration is contra indicated as the fistulae remain quiescent unless they become infected.

Congenital fistulae in the region of the ear may be classified into five groups as follows: (1) those of the anterior curve of the helix, (2) those of the lobule, (3) those above the tragus, (4) those in front of the lobule and (5) those of the neck.

PAGE.

Uudemann A. Plastic Repair of Defects of the Jaw (Die plastische Deckung der Luecken der Kieferknochen). *Chirurg* 1929, i, 817.

Defects in the upper jaw may be filled in a reliable and satisfactory manner by prostheses, but for defects in the lower jaw free osseous autoplasmic grafts are preferable to provide a scaffold for the regeneration of the bone and to act as a supporting surface for dental prostheses. Such grafts are indicated in cases of loss of mandibular continuity from injury, inflammation or necrosis, the removal of tumors and operations on congenitally small jaws and jaws which have failed to develop properly. In the West German Jaw Clinic at Dueseldorf about 1,480 bone transplantations have been done in the past fourteen years and of these approximately 1,360

were done for defects of the lower jaw. All except about 2 per cent were free transplantations.

In more than 100 microscopic studies made by the author it was found that in no case does the implanted tissue i.e. pieces of bone or soft tissue remain permanently. It is more or less rapidly replaced by new tissue formation. The transplant causes an irritation of its bed resulting in fluid transudation which penetrates the implanted tissue more or less rapidly depending upon whether the latter is soft or hard. Erythrocyte infiltration follows. Between the erythrocytes a network of endothelial tubes insinuates itself and a germinal tissue takes up the work of dissolving and replacing the implant.

This process may proceed even beyond the limits of the original implant. It does not matter whether the size of the defect to be filled is large or small whether the implanted bone lies in a bed containing living remnants of periosteum or bone still capable of regeneration whether the soft parts to support the implant must themselves first be built up plastically and therefore contain no periosteal or endosteal tissues whether the defect is in the anterior region of the jaw bone so that bony stumps are present for both ends of the implant or whether in the absence of one of the stumps of bone one end of the implant will be without support. The growth and shape will be determined by the conditions of use of the implant as well as by the blood supply and will be hampered by scar formation tissue weakness and impurment of the blood supply.

The clinical cure which follows the anatomical healing will be complete after from two to three months. The immobilizing supports may then be removed and the dental prostheses applied. In young persons the strength of the structure and the site of the transplant will increase with the growth of the rest of the jaw.

The procedures best suited to the varying conditions are illustrated by histories of cases of defects following the removal of a tumor or following injury. It is important to remove sources of infection and to make a preliminary correction of the position of dislocated bony stumps. Even small uneven stumps should be preserved unless their removal is necessary because of the nature of the original trouble (cancer tuberculosis). The filling out of very large defects and plastic building up of the entire lower jaw should be done in several stages. After plastic reconstruction of the mandibular joint the contact between the ends of the new joint sometimes becomes loosened because the implanted bony section was too short or undergoes too rapid atrophy or because the covering tissues especially the muscles are weak. The lower jaw then moves loosely and articulation and mastication suffer. In such cases the use of orthopedic dental prostheses and injections of alcohol to secure the formation of a supporting cicatricial pad may be of aid.

In cases in which the lower jaw is too small the surgeon should not be content with improving the

external form by filling out the chin with bone but should strengthen the power of mastication. In the West German Jaw Clinic good results were obtained in a large series of cases of receding chin by cutting through the horizontal ramus of the jaw in the region of the canine teeth or the first bicuspid on both sides stretching the resulting bony defect until the loosened middle section containing the chin was brought into fairly exact relation to the upper jaw fixing the jaw in the corrected position by means of Bruhn's extension forceps and hooks after the appliance had been previously well tested in every detail on a model and in the mouth and fitting in between the ends of each defect sections of bone obtained from the crest of the ilium. Extra-oral anesthesia of the second and third divisions of the trigeminal by Lindemann's method will be entirely sufficient. The author discusses the advantages of obtaining the transplants from the crest of the ilium. The transplants are never fastened with foreign material such as wire and silk but are fixed orthopedically.

GROD SCHMIDT (Z)

Sudeck P and Rieder W. Malignant Tumors of the Mandible and Their Treatment (Die malignen Unterkiefer-tumoren und ihre Behandlung). *Ergbn d Chir* 1929 xvi 583.

This is a detailed discussion of the pathogenesis clinical and roentgen pictures and treatment of sarcomata carcinomata endotheliomata on the borderline which sometimes run a benign course and sometimes a malignant course adamantinomata and epulis tumors with a review of the literature and many of the authors own clinical and operative experiences. The text is supplemented by photographs of the patients and operatively removed specimens roentgenograms photomicrographs and an extensive bibliography.

When a sarcoma or carcinoma develops from an injury the irritated wound does not heal and granulation tissue is formed. From this granulation tissue the new growth develops but the conditions for its appearance are as yet wholly unexplained. The excision of tissue for histological examination is permissible if for example after the extraction of a tooth the socket is found to be filled with granulation tissue but is not permissible if the tumor must first be operatively exposed and it is impossible to make an immediate histological examination and perform a radical operation if malignancy is found.

The authors are convinced from their experience of the occurrence of central fibroma of the lower jaw of malignant adamantinoma and of central epithelial tumors of the jaw malignant epulis. Operable cancer and sarcoma of the mandible must be operated upon radium and roentgen irradiation have proved disappointing. Radium treatment is superior to X-ray treatment and in cancer of the upper jaw has given good results.

The authors cite the case of a patient operated upon for a tumor of the jaw intermediate between

an adamantinoma and a true basal celled tumor of the skin which shows that artificial substitutes for a part of the jaw (prostheses) may be worn for years without signs of irritation even when the wound in which it is placed is not completely epithelialized. Koenig Roloff ivory inserts were found of value chiefly in the cases of older persons. In others the reconstruction of the living bony connection between the stump ends of the jaw bone either immediately or later as conditions may indicate (in malignancy after six months) was done successfully. The authors do not approve of the 'combined procedure (implantation after fourteen days into the freshened granulating operative wound) or of Axhausen's 'preliminary implantation in cases of malignant tumors. **GEORGE SCHMIDT (Z)**

EYE

Gifford S R. Muscle Transplantation for Paralytic Strabismus. *Arch Ophthalm*, 1929, n 651

The author reports three cases of paralytic strabismus which were operated upon with good results. The operation was performed under general anesthesia in order that the extensive infiltration of local injection might be avoided. Following complete tenotomy of the opposing muscle and good exposure of the parietic and two vertical muscles, the outer third of the superior rectus was freed from its insertion and then sheered off with some of the scleral tissue. A similar procedure was carried out on the inferior muscle. Both transplants were then sutured through the upper third of the tendon of the paralyzed muscle and beneath that tendon.

After the operation double bandages were kept on for seven days. The stitches were removed on the tenth day. **GEORGE R. McATLIF, M D**

Rutherford C W. Membranous Conjunctivitis with Loss of the Eyeball. Report of Cases. *J Am M Ass* 1929 xciii 1779

Membranous conjunctivitis has been recorded in the literature since 1855 under the term pseudomembranous plastic, diphtheritic non diphtheritic croup, acute superficial or deep conjunctivitis. Many factors have been considered responsible for its onset and many types of treatment have been instituted but there seems to be no definite knowledge regarding its etiology and therapy.

The author sent inquiries regarding this condition to 100 ophthalmologists. From the 73 replies received he draws the following conclusions:

1. Conjunctivitis is a state of reaction to injury or infection.

2. The formation of membranous exudates is an intercurrent condition which cannot be produced by injuries or organisms alone.

3. A predisposition or susceptibility must be present. This can result from (a) an injury slight or severe, (b) a local inflammation in the incubation active or convalescent stage or (c) a general disease which has lowered the patient's resistance.

4. To predisposition must be added organisms that are capable of doing harm.

5. Membranous exudates of relatively short duration occur in some cases of diphtheria. They occur also in a recurrent form of prolonged duration, especially if streptococci are present. Frequently both eyes are affected.

6. The principal complication of membranous conjunctivitis is ulceration of the cornea with intraocular infection and loss of vision, if not loss of the eyeball.

7. Treatment for the recurrent variety is usually without effect.

8. Membranous exudation of the conjunctiva is only a symptom usually of some general disease in which the ophthalmologist may have a consultation interest or of an infection within the orbit for which he has a surgical responsibility.

LESLIE L. MCCOY, M D

Rucker C W. Regeneration of the Cornea. *Arch Ophthalm* 1929, n 692

Rucker studied the regeneration of the cornea after excision of a part of it to discover what factors determine whether the newly formed corneal tissue will be clear or opaque. The experiments were performed on rabbits. A disk from one half to three-fourths the thickness of the cornea was removed from 1 to 2 mm within the limbus.

Complete regeneration usually occurred in a week but the new tissue was so delicate that ulcers were frequently formed. The corneal stroma seemed to be partly regenerated.

In a second series of experiments the lids were sewed together to protect the exposed stroma but after five days the eyes became badly infected.

In a third series a conjunctival flap was drawn over the site of the operation but the subconjunctival connective tissue became adherent to the corneal parenchyma before the epithelium could grow between them.

Hence in none of the experiments was it possible to preserve normal corneal transparency.

GEORGE R. McATLIF, M D

Rodin F H. Angioma of the Iris. The First Case To Be Reported with Histological Examination. *Arch Ophthalm* 1929 n 679

The case reported in this article was that of a four year old boy without any known predisposing cause. Rodin cites also nine other tumors reported as angiomas of the iris three of which may be considered as such from the clinical observations and six of which were simple granulomata, granulation tissue or spindle celled sarcomata.

GEORGE R. McATLIF, M D

De Courcy T L. The Significance of Vitreous Opacities. *Brit M J* 1929 n 999

The author believes that vitreous opacities are caused by (1) changes in the condition of the capillary wall such as thickening and arteriosclerosis.

sis (2) changes in the condition of the blood such as touns, which interfere with the endothelial cells of the capillaries or (3) changes in the vitreous itself, congenital traumatic, or mechanical. Congenital remnants may be left in the condensation of the fibrils as during embryonic development it is likely that some residue is separated and some of the fibrils remain. Trauma when not sufficient to cause hemorrhage may still upset the delicate mechanism of the vitreous gel, and a very small degree of trauma may cause separation of the protein base and liquify the vitreous producing floaters. Mechanical obstruction as in venous thrombosis produces hemorrhages from the venules with the unabsorbed residue left as vitreous opacities.

The most common cause of vitreous opacities is an altered condition of the blood due to general or local toxic causes. The glandular system and even the ductless glands may be responsible. In the study of a case presenting vitreous opacities the shape of the eye, the condition of the vitreous vessels, and lens and the patient's age and past and present general condition must be considered.

De Courcy believes it is quite possible that early cataracts and vitreous opacities have the same etiology. He describes the method of examination, the measurement of the opacities, the symptoms and rare types. **LESLIE L. MCCOY M D**

EAR

Fowler E P Limited Lesions of the Basilar Membrane *Arch Otolaryngol* 1929 2 624

Formerly it was thought that true tone gaps existed within certain narrow frequency ranges although the frequencies to each side were easily heard. However with the perfected IA audiometer no true gaps occur and such areas have markedly defective hearing. These areas occur in nerve deafness and obstructive deafness and are regularly formed in the area of 4000 vibrations. Bone conduction is usually lowered. Tinnitus is frequently present and may accentuate the depression within the dip frequencies. It appears that acoustic trauma and toxic neuritis may account for these dips. Small limited lesions in or on the basilar membrane seem sufficient to produce the gaps.

GEORGE R. McALLISTER M D

NOSE AND SINUSES

Skilleen R H The Pathology and Diagnosis of Ethmoiditis *Ann Otol Rhinol & Laryngol* 1929 xxxviii 902

Early in infection of the ethmoid the mucosa along the edge of the middle turbinate assumes a blanched and translucent appearance. Finally true polypoid changes occur. The picture varies somewhat with the type and degree of the infection.

The types of ethmoiditis are classified by the author as follows: (1) generalized infection of the

mucosa, which may occur in a small or a large area and in rare instances is associated with empyema of one cell or a sharply defined growth of cells (2) hyperplasia and (3) combined hyperplasia and suppuration. The first form is rarely diagnosed in its early stages chiefly on account of the paucity of symptoms. It often results in grave systemic disturbances. Combined hyperplasia and suppuration are encountered in advanced cases of hyperplastic ethmoiditis. **W M PATON M D**

Fenton R A Radical Treatment of the Ethmoid *Intranasal Ann Otol Rhinol & Laryngol* 1929 xxxviii 913

The standard procedures in the radical treatment of the ethmoid by the intranasal route are reviewed and discussed. The operative field as seen by the surgeon is portrayed by a series of sketches and the regions beyond visual control are indicated by lateral diagrams.

The objects of the intranasal operation are first to secure aeration and second to establish drainage without invading unaffected cellular structures. Local anesthesia supplemented by a preliminary scopolamine morphine injection is recommended. Contra indications of a general nature include disease which may be implanted in the operative field. Acquired atresia the small no. of childhood and the intracranial complications of ethmoid suppuration forbid intranasal procedures.

Intranasal surgery of the ethmoid may be done in several stages. This conservative tendency is gaining more general acceptance. Intranasal ethmoid procedures are grouped as follows: (1) improved methods of access including septal resection, partial middle turbinectomy, removal of polyps and invasion of the anterior cells, (2) invasion of the anterior cells carried back through the posterior cells without turbinectomy, and (3) turbinectomy combined with invasion of anterior cells and removal of the ethmoid mass en bloc with the turbinate attached.

The procedures of choice in the hyperplastic and suppurative types of ethmoiditis are discussed. The instruments used should have broad rounded outlines. The immediate after treatment should be limited to hemorrhagic care should be taken not to interfere with the normal process of healing.

In conclusion the author states that intranasal surgery of the ethmoid has been found highly satisfactory within the limitations of its indications and that extremely radical methods carried out blindly through the narrow nasal pathway are to be condemned. **W M PATON M D**

MOUTH

MacKenty J F The Operative Treatment of Cleft Palate A New Method *Arch Otolaryngol* 1929 x 491

Following a brief historical review of the surgical correction of cleft palate MacKenty quotes Mauken's conclusions as follows:

- 1 The operation should be advocated only when there is a fair likelihood of success
- 2 It should be done only by those possessing skill and experience
- 3 If multiple operations are probable the patient or his parents should be so informed
- 4 The operation should be done as early as possible

5 The operation aims at improvement of the patient's health, his general morale and his speech

6 Speech education is imperative

Mackenty believes that too little attention has been given to the preparation of the child for operation. He states that the premaxilla may be re-placed from four to eight weeks after birth. The palate should usually be operated on at the end of the first or the beginning of the second year.

In the cases of older children the tonsils and adenoids should be removed and the teeth and gums properly cared for. Since septic infection and traumatism are important factors causing failure the strictest aseptis must be maintained and the operation performed with minimal trauma.

In the procedure used by the author an incision is made along both edges of the cleft and the periosteum is elevated from the center outward to about the apex of the alveolar ridge. The sutures are placed but not tied at this time.

To relieve lateral flap tension a silver or lead band about 1 cm. wide is passed through an incision just posterior to the alveolar ridge into the nasopharynx and brought out through a similar incision on the opposite side. Traction on the two ends of the band relieves the tension as the palate sutures are tied. The ends of the band are then brought together and clamped, relief from suture tension being thereby obtained.

To reduce disturbance by tongue pressure, an obturator of platinum wire fitting the alveolar process and with cross bars over the palate is used. This is sewed to the gum at three points and left in place until the sutures are removed. It gives considerable protection and yet in no way obscures inspection or interferes with cleaning. When teeth are present clasps are used to retain the obturator.

As the result of the use of these mechanical devices the incidence of primary healing has been increased at least 20 per cent and in uncomplicated cases complete union results in 95 per cent.

CHARLES W. FREEMAN, M.D.

Wasmund M. Suppurative Processes of the Floor of the Mouth (Die eitrigen Prozesse des Mundbodens). *Vjschr. Zahnheilk.* 1929 xlv 1 272

The author bases his conclusions on clinical operative and anatomical observations made in more than 350 cases of severe purulent processes in the floor of the mouth which were treated during the last six years.

He believes that the term "Ludwig's angina" which signifies only a single and not constant symptom of these conditions should be dropped and the

disease which spreads as a phlegmon (the true "phlegmon of the floor of the mouth") should be distinguished from purulent breaking down of the floor of the mouth and the neighboring spaces ("abscess of the floor of the mouth," "abscess of the submaxillary space," "abscess of the sublingual space" and "abscess of the floor of the mouth and the parapharyngeal space").

In the 35 cases of phlegmon seen by the author during the years 1927 and 1928 there were 4 deaths, whereas in the 143 cases of abscess, there was no mortality. The process developed, not in the skin or the subcutaneous connective tissue but in one or more of the preformed spaces of the floor of the mouth (the fascia lined submental space, the space in the musculature at the base of the tongue, the right and left sublingual spaces not lined by fascia, and the right and left submaxillary spaces lined by fascia). The author describes these spaces in detail with illustrations showing the point of origin, the point of entry, and the routes of spread of the infectious process.

The most important factors in the spread of the process are the open connection with the parapharyngeal and retropharyngeal spaces, the burrowing downward of the infection from these spaces into the spaces in the neck containing the large vessels and into the mediastinum or upward along the internal and external pterygoid muscles into the pterygopalatine fossa (8 cases in the author's material with 2 deaths from meningitis and thrombophlebitis of the cavernous sinus) or into the region of the temporal bone, rupture into the parotid space, invasion of the process from the submaxillary space into the vascular spaces of the neck, extension downward over the hyoid bone and the combination of phlegmon of the floor of the mouth and the cheek.

Involvement of the parapharyngeal and retropharyngeal spaces has previously been overlooked because swelling is not visible externally and the accompanying total locking of the jaws obstructs the view into the mouth and pharynx.

The chief cause of suppurative processes in the region of the jaw, the cheeks, and the floor of the mouth is disease of the teeth, especially disease of the dental pulp and its sequelae. Disease of the roots of teeth remaining latent for years may be suddenly made manifest by weakening of the general condition due to an infectious disease, injury, or operation. After the teeth have been lost, necrotic foci in the bony walls of the sockets may remain. The roentgen examination may be deceptive. Even when there is no tooth ache the teeth may be responsible for the inflammatory process in the soft parts and therefore should always be carefully examined. Severe suppurations of the floor of the mouth often follow the extraction of teeth or operations on the mouth when the wounds become infected. Among other causes are ulcers of the wisdom tooth, the careless injection of a local anesthetic, infected fractures and osteomyelitis of the jaw, salivary gland inflammation and salivary stone disease, inflammation of the palatine

tonsil (this is often falsely assumed when the point of origin is a diseased tooth) suppurative inflammatory conditions of the face and mouth, injuries of the soft parts of this region the submaxillary lymphadenitis of scarlet fever and measles and paradontosis. In the author's cases the cause was obscure in only 5 per cent.

The course of the process is mild when staphylococcus albus is the infecting organism. A mixture of streptococci renders the prognosis less favorable. Severe conditions are produced by the putrefactive organisms the anaerobes and the organism of grippe (in the year 1917).

In the clinical picture the phlegmonous and the abscessing forms are to be differentiated although the distinction is not sharp. There is one group with a chronic course another (more numerous) in which the swelling progressively increases but ultimately a circumscribed abscess is formed, a third group (the largest) with severe acute suppuration of the floor of the mouth and a fourth group with uninterrupted progression of the phlegmon and general sepsis.

The clinical symptoms vary also according to which of the anatomical spaces mentioned is involved and according to whether or not in the severe progressing phlegmonous varieties other parts of the body are affected.

The treatment begins with exact localization of the condition and the removal of obvious foci of disease especially in the teeth. The treatment of the suppurative process in the soft parts consists first of conservative procedures and later of whatever surgical procedures are indicated such as opening of the suppurative area for drainage of the inflammatory products and the ingress of oxygen ligation of the large veins to prevent dissemination of the infectious material and possibly tracheotomy. In every case care must be taken to preserve the defensive and healing powers of the body.

The article is supplemented with a bibliography.
GEORG SCHMIDT (Z)

Gask, G. E. and Moir, E. D. The Technique of Radium Treatment of Carcinoma of the Tongue and Mouth. *Brit. radiol.* 1929 2: 403.

The authors describe the method of examining the patient estimating the dosage of radium and inducing general and local anesthesia. They emphasize the importance of eliminating oral sepsis.

The primary growth is usually treated by interstitial radiation with radium needles or radon seeds. The period varies from six to fourteen days.

The glandular areas are treated with radium needles according to a standardized arrangement covering the submental submaxillary and sternomastoid region. The needles are left in position for from seven to ten days. When the glands are large they are first irradiated by an external radium collar of Columbia paste.

After the irradiation the patient is watched and a second treatment is given if it becomes apparent that the first treatment was inadequate. Anti-

siphilis treatment is given whenever the Wassermann reaction is positive.

PHARYNX

Jessen, J. The Treatment of Carcinoma of the Tonsil (Ueber die Behandlung von Tonsillarkrebs). *Ugeskr. f. Læger* 1929 1: 329.

The author reports twelve cases of tumor of the tonsil which were treated by various methods. All were advanced cases coming to treatment too late. In some of them metastases were present. The ages of the patients ranged from thirty three to sixty two years. Eleven of the patients were men. Of four patients who were treated by radium implantation all died. At first, there was improvement in the sense of local disappearance of the tumor with in some instances complete epithelialization of the necrotic areas but an even more rapid growth of tumor tissue soon occurred in the surrounding tissues. Microscopic examination also showed that in the healed areas the cancerous tissue had entirely disappeared but that the tumor cells in the surrounding tissues still exhibited lively growth. The author explains the behavior in the surrounding tissues by assuming that these tissues were injured by the implantation of the radium and thereby rendered unable to resist the growth of the cancerous masses.

Six other cases of tumor of the tonsil—four of carcinoma and two of sarcoma—were treated with the roentgen rays. The patients with carcinoma showed no change under this treatment and all of them died. In one of the cases of sarcoma the local tumor completely disappeared after three irradiations but death occurred at the end of a month from cerebral metastases. Autopsy demonstrated the absence of local recurrence. In the other case the roentgen treatment was instituted after operative removal of the tumor and the patient is still free from recurrence after thirteen months.

Cases of extensive carcinoma were treated by diathermy coagulation. Local destruction of the tumor resulted but the treatment had no effect on recurrence or metastasis.

The author concludes that circumscribed sarcomata should be treated by extirpation of the tumor followed by roentgen irradiation and generalized sarcomata by roentgen irradiation only and that circumscribed carcinomata should be treated with large doses of radium and extensive carcinomata by electrocoagulation and roentgen irradiation.

LEZ (2)

NECK

Hurxthal, L. M. The Significance of the Various Signs and Symptoms Following Subtotal Thyroidectomy for Hyperthyroidism. *Surg. Clin. N. Am.* 1929 15: 1319.

There are numerous minor signs and symptoms which occur simultaneously with the marked improvement following subtotal thyroidectomy for

hyperthyroidism. Most of them suggest the possibility of one of the more serious sequelæ which may occasionally follow subtotal thyroidectomy, viz postoperative myxœdema, tetany, laryngeal paralysis and persistent or recurrent hyperthyroidism. However these minor symptoms are usually of comparatively little importance.

Post operative myxœdema appears as a rule within six months after the operation. It is associated with a low basal metabolic rate but its severity is not always in agreement with the basal metabolic rate. Loss of hair is frequent in myxœdema but is also very common after thyroidectomy and is invariably followed by a new growth within six months. Sensitiveness to cold and puffiness of the eyelids are common features of myxœdema but both may be residual conditions from the hyperthyroid state. Brittleness of the finger nails, dryness of the skin and stiffness of the joints are often complained of.

In active tetany following operation Chvostek's or Trousseau's sign is almost invariably positive if the blood calcium is below 7.5 mgm. Muscular cramps suggest tetany but are so exceedingly common for the first six months after thyroid operations that their significance is often problematical.

The question of the presence of mild persistent hyperthyroidism must be decided in a small percentage of cases. The clinical impression rather than the metabolism test should be considered first. Where there is considerable doubt as to the presence of persistent hyperthyroidism the condition is usually absent and iodine will be of no benefit. If there are easily palpable thyroid remnants and if the metabolic rate is high, normal or above normal

Lugol's solution will prove partially effective in most instances and completely effective in some.

The distinction between persistent and recurrent hyperthyroidism is often arbitrary. Patients presenting symptoms of hyperthyroidism after they have shown a normal metabolic rate with complete clinical cure at any one examination following subtotal thyroidectomy are considered to have a recurrence. In recurrent cases there is what appears to be a regrowth or hyperplasia of thyroid tissue with toxic symptoms. Lugol's solution will be almost as effective in these cases as in untreated cases. Further removal of thyroid tissue is advisable if, after a reasonable length of time, iodine solution has not given maximal results.

Weakness of the voice is a fairly common complaint following subtotal thyroidectomy. It is not accompanied by hoarseness, and laryngeal examination reveals no paralysis of the vocal cords. In most instances it passes off within a year.

SAMUEL KAHN, M.D.

Brandberg, R. A Case of Tumor of the Carotid Body with Thrombosis of the Arteria Carotis Interna. *Acta chirurg Scand* 1929 lxx 464

The author describes a tumor of the carotid body in a woman twenty one years of age which was removed without resection of the large arteries. The internal carotid artery was found to be thrombosed. The author believes that the thrombosis was caused by disturbances of circulation arising from compression and backward and upward displacement of the artery by the tumor. The postoperative course was smooth. When the patient was re-examined two years later she was found free from recurrence.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Gardner W J The Therapeutic Effects of Encephalography *Pennsylvania M J* 19 9 xxxix 126

In the cases of 19 patients suffering from the sequelae of cranial trauma the average follow up interval after therapeutic encephalography was nine months. Of 12 patients with posttraumatic epilepsy 4 had no further attacks 5 had attacks less frequently 1 showed no improvement and 2 had attacks more frequently after the treatment. Of the 12 patients suffering from posttraumatic headache 2 were completely relieved 8 were benefited 1 reported no improvement and 1 stated that the headache was more severe. Of 6 patients suffering from tinnitus 2 were entirely relieved 2 were benefited 1 reported no change and 1 stated that the condition was worse. Of the 8 patients complaining of posttraumatic vertigo 2 were entirely relieved 3 were benefited and 3 noted no change.

Fourteen patients with a clinical diagnosis of essential epilepsy were followed for an average period of nine and three-tenths months after encephalography. Five of them reported complete relief 4 stated that the convulsive seizures were definitely less frequent 3 were not benefited and 2 stated that their condition was worse. In this group the associated symptoms of headache tinnitus and vertigo were relieved as much as the convulsive seizures.

The encephalography was always done with the patient in the sitting position. As the fluid was withdrawn from the lumbar sac in 5 c m amounts it was replaced with air in similar amounts until no more fluid could be obtained. A constant check was kept on the intraspinal pressure by means of a water manometer and marked fluctuations in pressure were avoided. The immediate ill effects were headache, diaphoresis, nausea and vomiting. No permanent ill effects were observed and there were no disasters in a series of over 100 encephalographies for lesions of the central nervous system.

KURT H. HORTA M.D.

Fujibayashi K Internal Hydrocephalus Produced Experimentally by the Intracranial Injection of India Ink (*Ueber den experimentellen Hydrocephalus internus durch Intracranialinjektion von Tusche*) *Zeitschrift für schol. med. u. imp. Kyoto* 1929 20 195

Heretofore the experimental production of internal hydrocephalus was always accomplished by means of agents injected directly intracranially through the occipital region. Recently it has been shown that certain fluids can be injected easily

through the entire nervous system. The author has made various drugs reach the brain by way of the sciatic nerve. In the investigations reported in this article he injected the sciatic or the median nerve of young rabbits and cats with a suspension of India ink or lamp black in machine oil in amounts of from 0.5 to 0.8 c m in a single portion or in as many as four portions. The results varied with the amount of the ink and the method of injection.

At necropsy the carbon particles were found over almost the entire brain surface especially on the basal surface and often in the clefts between the hindbrain and the midbrain. Following direct injection into the cranial cavity through the atlanto-occipital ligament the carbon particles are distributed chiefly over the dorsal surface of the cerebellum and in small amounts over the basal surface. After injection of the sciatic or median nerve a considerable amount of India ink was found in many cases in the ventricles especially between the plexus folds of the fourth ventricle. The carbon particles probably entered the ventricle through the communication at the fourth ventricle (the foramina of Magendie and Luschka).

The appearance of the carbon particles in the ventricles did not always produce an internal hydrocephalus. The following four types of observations were made: (1) no carbon particles within the brain even though they were found in considerable amounts outside of the brain; ventricles unchanged; (2) carbon particles around the medulla oblongata but not in the ventricles; ventricles dilated; (3) carbon particles within the brain cavity but ventricles undilated; and (4) carbon particles in the ventricles and ventricles dilated.

In case in which the ink particles were found not in the ventricles but around the medulla oblongata the dilatation of the brain cavities appeared only late. The appearance of carbon particles in the ventricles did not always produce dilatation but their appearance in the brain cavities or at least a deposit of carbon around the medulla was the necessary prerequisite for the development of internal hydrocephalus. The third fourth and lateral ventricles were affected singly or combined. External hydrocephalus was also observed but was only partial. The space between the hindbrain and the midbrain which normally is a narrow cleft filled by the plexus of the third ventricle was dilated and always revealed a considerable amount of carbon.

As causes of the dilatation of the brain cavities following the injection of foreign bodies two factors are mentioned namely: (1) obstruction of the circulation of the spinal fluid as a result of the occlusion of its passage by the foreign body and (2) hindrance to the passage of the fluid by reactionary

inflammation in the brain and its membranes. These two factors cannot be separated as the foreign bodies always produce a reactionary inflammation. At any rate the circulation of the spinal fluid was obstructed by the injection of ink or by the secondary inflammation, and the constantly accumulating fluid produced the dilatation of the brain cavities.

In conclusion the author says that so far as the foreign body effect is concerned intraneural injections lead to the same results as the direct intracranial introduction of foreign bodies and he believes that the sheath spaces of a peripheral nerve afford an easy passage to the brain.

LOUIS NEUWELT M D

Dickerson D G Intracranial Haemorrhage
Northwest Med 1929 xxviii 535

Dickerson reports six cases illustrative of extradural subdural subarachnoid and chronic subdural haemorrhage and intracranial haemorrhage of the newborn in which persistence of the symptoms and the presence of focal signs led to operative interference. Uneventful recovery resulted in every case.

Spinal puncture is mentioned as a valuable diagnostic and therapeutic measure but the hazards of its indiscriminate use are emphasized.

KNOT H HOWCK M D

Manenkow, P W Experimental Contributions on the Mechanism of the Direct Affection of the Oblongata in Acute Diffuse Peritonitis (Experimentelle Beiträge zum Mechanismus der direkten Affektion der Oblongata bei akuter diffuser Peritonitis) *Zürcher f exper Med* 1929 lvi 338

The experiments reported by the author were carried out on rabbits. The vagus nerves were sectioned just beneath the diaphragm in one animal and after three weeks a 1:100 dilution of a twenty four hour culture of staphylococci was injected subcutaneously into the wall of the stomach of this rabbit and a control animal. In order to render the conditions in both animals as similar as possible the control rabbit was subjected to a laparotomy with pull on the stomach at the time that the nerves were cut in the experimental animal. In later experiments the staphylococcus culture was injected in a dilution of 1:400.

In order to determine the importance of intoxication by way of the blood stream in peritonitis one rabbit was subjected to a laparotomy and an injection of staphylococci into an ear vein and a control animal was subjected to a laparotomy and a subserous injection of staphylococci into the wall of the stomach.

In another series of experiments the author studied the local reaction following the injection of staphylococci into the stomach, intestines, urinary bladder, uterus, abdominal wall and parametrium. He draws the following conclusions:

1 The cause of the rapid death in peritonitis lies in paralysis of the vasomotor and respiratory centers of the oblongata (Heineke).

2 In this paralysis the vagus plays an important role. Interruption of the neurolymphatic path of the vagus, the direct connection between the organs in the abdominal cavity and the oblongata, protects the latter from quick and severe involvement in peritonitis (Figalew and Buschmakina Speransky).

3 If only a few of the branches of the vagus nerve are preserved, the difference between the length of survival of the infected animals and the control animals disappears (Manenkow).

4 The intoxication of the oblongata does not occur by way of the blood stream. All of the animals infected by intravenous injection survived by an appreciable length of time the controls which received the injections in the gastric wall (Manenkow).

5 The tissues of the organs which have a direct neurolymphatic connection with the central nervous system (stomach, abdominal wall, urinary bladder) showed a much more marked local reaction than the organs which have no such connection (large intestine, uterus) (Manenkow). GEBELE (Z).

Adie W J, Dott N, Dodds E C, Cairns H and Others Discussion on Diseases of the Pituitary Body *Proc Roy Soc Med Lond*, 1929 xxiii 201

ADIE discussed pituitary tumors according to the staining reactions of the cells. He classified them as granular and agranular adenomata. The former have acidophile and basophile cells. Adie stated that there is a rough agreement between the cell structure of the tumor and the symptoms but no rigid formula is applicable to all cases. A tumor may be large and cause failure of vision but may not produce demonstrable glandular symptoms. Persistent glycosuria occurs with granular adenomata only and usually in advanced cases. A knowledge of the course of the disease is a guide to the proper treatment of all pituitary lesions. Surgery is indicated only to relieve headache and conserve vision. In acromegaly X-ray therapy should be tried. Until substitution therapy is better developed, surgery is not indicated in cases of glandular disturbance.

Adenoma of the anterior lobe without acromegaly is the most common and by far the most important pituitary tumor. It is an agranular adenoma. The cardinal sign is loss of vision; there may be no other sign. The tumor associated with acromegaly is usually a simple granular adenoma of the anterior lobe.

The diagnosis of pituitary disorders may be very difficult. Pituitary tumor should be suspected in every case of failing vision without obvious cause. Tabes and pituitary tumor with progressive optic atrophy may be differentiated by the Argyll-Robertson phenomenon.

Third in frequency are tumors arising from the remains of Rathke's pouch and from groups of cells on the stalk. These are practically the only neoplasms that occur in childhood. Their symptoms differ according to the type, size and location of the tumor. A correct diagnosis is usually made because of the finding of calcification of the cyst wall in the

roentgenogram. These tumors are relatively unfavorable for operation.

Diabetes insipidus is an important manifestation of pituitary disease. Its exact nature and the mechanism of its production are not understood but it is known that the condition may result from lesions of the pituitary body as well as lesions of the hypothalamus. The further elucidation of this and other signs of pituitary disorders will require the combined efforts of the clinician, biochemist, and experimental physiologist.

Dorr discussed the surgical types of pituitary disorders, the treatment indicated, and the results of treatment. He described seven cases as examples of the different types of disorders. He stated that evidence now seems to show that eosinophile cells are concerned with growth and basophile cells with sexual development and activity; hence there is need of revising the nomenclature according to the cell types.

He advocated radiotherapy for early adenomata and surgical relief of pressure when vision is impaired. The transphenoidal approach is best for simple adenomata and the transfrontal approach for cases with intracranial expansion. The results depend upon the degree of advancement of the disease but on the whole are encouraging and satisfactory.

Dodds called attention to the fact that while the connection between the secretion of the anterior lobe and growth has been known for many years it has been proved by direct experimental evidence only recently. There are at least two and probably three separate hormones secreted by the anterior lobe. Exact experimental methods have now been evolved for the study of various disorders of growth, infantilism, and mental disorders.

Letrov stated that for several years he had been of the opinion that pituitary extracts contain at least two different substances. This theory was proved correct by the recent isolation of vasopressin and oxytocin. From a trial of several pituitary extracts in a case of diabetes insipidus he concluded that the fresher preparations have a more marked effect than older preparations and that filtering decreases the value of the extract.

Critchley discussed the pathology of the epithelial tumors of the pituitary and infundibulum after tracing the embryonic development of the pituitary body. Using Dufys classification he grouped the suprapituitary epithelial tumors as (1) cysts of Rathke's pouch, and (2) craniopharyngeal duct tumors which include (a) papillary cysts, (b) adamantinomatous, and (c) spinal celled or prickle celled carcinomata. He described the chief characteristics of each group.

Cairns discussed differential points from the surgical viewpoint. He stated that while surgery is necessitated in some cases by disturbances of internal secretion it is indicated in the largest group by so called neighborhood signs viz optic atrophy, hemianopsia, and enlargement of the sella turcica. In the former group acromegaly may be caused by a

suprasellar growth and removal of the tumor results favorably. Froehlich's syndrome may result from several different pathological lesions in some cases the treatment is surgical but in most it is non-surgical. Suprasellar cysts are differentiated mainly by the calcification shown by the X-ray (75 per cent of cases).

Cases of suprasellar meningioma are characterized by bitemporal hemianopsia, optic atrophy, a sella turcica of normal size, and absence of endocrine symptoms. Cases of meningioma en plaque show optic atrophy, a defect in the visual fields, a change in the shape of the sella turcica, and unilateral exophthalmos. Gliomata of the optic chiasm cause obesity, polyuria, and polydipsia in addition to the other signs of pituitary tumor. The sella may be eroded forward and the visual disturbances may be entirely out of proportion to the disk changes. Gliomata of the third ventricle differ from those of the optic chiasm in that they produce early papilledema from hydrocephalus and do not cause temporal hemianopsia. Cerebral aneurysm may produce the signs of a pituitary tumor. The sella turcica may be enlarged by the pressure of a secondary hydrocephalus. The visual fields should be examined early.

Pickworth showed a large number of slides illustrating the relationship of sphenoidal sinus infection to disorders of the pituitary gland in cases of mental disorder.

Graves pointed out four symptoms in mental cases which seem to have a direct relationship to pituitary function: (1) general loss of muscle tone, (2) disturbance of the peripheral circulation (pallor, cyanosis), (3) disturbance of nutrition (emaciation, obesity), and (4) disturbance of the reproductive mechanism (amenorrhoea).

ALBERT S. CRAWFORD, M.D.

Abou II. The Clinical Development and Treatment of Abscesses of the Cerebrum and Cerebellum of the Encephalic Type (Considérations sur l'évolution clinique et le traitement des abcès du cerveau et du cervelet forme encéphalique).
Rev. chir. 1929, xxvi, 303.

Following a report of two cases of abscess of the cerebrum and one case of abscess of the right lobe of the cerebellum, the author discusses certain points in the diagnosis and treatment of brain abscesses regarding which there is a lack of agreement.

In Abou's opinion the classical picture of signs of general infection, increased intracranial pressure, and localizing signs is not very reliable. Fever is rather rare and of less aid in the diagnosis than a discrepancy between the pulse and the temperature. A sign of real value which is rarely mentioned is rapid emaciation; the patient practically melts away, as in certain cases of severe suppurating war wounds. Signs of intracranial hypertension are always present but in the beginning they are often transitory and unstable. Headache is significant when it is associated with other symptoms. Its intensity is more

important than its localization. It is almost always accompanied by psychic disturbances, even in ambulatory cases. All of the author's patients have shown torpor and apathy. Slowing of the pulse is an excellent sign but is intermittent and requires numerous examinations for its determination. Examination of the eyegrounds often shows signs of inflammation of the adjacent brain tissue, but sometimes these signs are lacking. Localizing signs are late, the picture is not complete until too late for effective operation. Lumbar puncture should be performed to eliminate meningitis. In all of the author's cases the meninges were normal. In his last case only headache and stupor suggested brain abscess.

The primary lesions should be treated first, the source of infection being removed so far as possible. At a second operation puncture should be done to find the pus and the abscess should be opened and drained. Drainage should be continued as long as necessary, and the patient kept under careful observation. There has been a great deal of discussion in regard to the method of drainage. The author thinks drainage should be accomplished by free craniotomy, the diseased brain being allowed to herniate through the wound and drain itself. The opening in the skull should measure at least 6 by 6 cm. and a small crucial incision should be made in the meninges. The day after the opening is made the diseased brain tissue will protrude through the wound. The wound should be enlarged progressively as much as is necessary to prevent strangulation and gangrene of the herniated brain. Aloin follows the development of the hernia and incises enough to effect decompression. Handling of the wound should be reduced to the minimum. The author uses dressings of gauze covered with sterilized vaseline which allow the secretion to escape and prevent the formation of adhesions. The herniated mass of brain tissue continues to function. As the hernia of the brain is a defense measure the tissue should not be excised. This method of drainage by exteriorization of the inflamed brain tissue greatly improves both the immediate and the late prognosis.

AUDREY G. MORGAN, M.D.

PERIPHERAL NERVES

Solieri S. Neuralgia of the Median Nerve Caused by a Supra Epitrochlear Process (Neuralgia del nervo mediano da processo sopra-epitrochleare). *Chir. d. organi di movimento* 1929 XIV 171.

The supra epitrochlear process is a small bony formation which develops abnormally on the lower part of the inner surface of the humerus half way between the internal and anterior margins of this bone and about 60 mm. above the most prominent point of the epitrochlea. A fibrous band passes from it to the epitrochlea. As a rule the process is from 6 to 13 mm. long but Zagni found one which was 4 cm. long. It is evidently a degenerative reversion. It rarely causes symptoms but the author reports a

case in which it caused intense pain in the area supplied by the median nerve. The patient was a man nineteen years of age of a low type with eyebrows meeting in the middle of his forehead a protruding jaw, and darwinian tubercles. The process was on the left arm 6 cm. above the bend of the elbow. Its tip was blunt and directed forward downward and inward. The pulsation of the humeral artery could be felt just inside it. The right arm and the rest of the skeleton were normal. Roentgen examination showed that the bone of the process was less compact than that of the shaft of the humerus.

Resection of the process was followed by immediate relief of the pain but in six months a recurrence developed. Removal of the newly formed bone at a second operation was again followed by relief of the neuralgia. Two months after the second operation the patient was still free from pain but roentgen examination showed the formation of an incompletely ossified lamina of bone.

The author thinks that the recurrence developed because he detached the periosteum over the process and replaced it after the operation. He concludes that the process should be removed with its periosteum and the fibers of insertion of the pronator teres.

AUDREY G. MORGAN, M.D.

Leinati F. Reunion of Peripheral Nerve Stumps After Lesions with Large Losses of Substance (La riunione a distanza dei monconi dei nervi periferici nelle lesioni con forte perdita di sostanza). *Chir. d. organi di movimento* 1929 XIV, 152.

In experiments on twenty four dogs the author removed up to as much as 30 mm. of the sciatic nerve and substituted dog tendon for it. He found homologous tendon to be a good substitute for catgut and silk because it does not cause an inflammatory reaction, it is more resistant and more readily absorbed than catgut and when the defect measured no more than 20 mm. it served as a good conductor for nerve fibers and brought about the formation of a good nerve scar and good neurotization of the peripheral stump.

The histological and trophic results in Leinati's experiments were much better than those obtained by Edinger's method but the functional results during the observation period of ten months were no better than those obtained with the methods in common use.

AUDREY G. MORGAN, M.D.

SYMPATHETIC NERVES

Leriche R. and Fontaine R. The Role of Cicatrization Neuromata of the Sympathetic in the Remote Postoperative Results of Sympathectomies (Sur le rôle des névromes de cicatrization du sympathique dans les suites post-opératoires éloignées des sympathectomies). *J. de chir.* 1929 XXXIV, 252.

A regeneration neuroma has never been found in the adventitia after periarterial sympathectomy. After three or four months the nerve network of the

adventitia is completely reconstituted. The regeneration occurs at the expense of the Remak fibers.

As Langley found that the cervical sympathetic functioned perfectly within less than a month after it had been sectioned, the authors studied only cases in which the extent of the resection excluded all possibility of regeneration. They investigated the effect of resection of the sympathetic chain and of periarthral sympathectomy. They found that in dogs and rabbits resection is followed regularly by the formation of a neuroma which is more or less marked and in all respects analogous to the neuroma following the amputation of a spinal nerve.

Nikolajew reported that in dogs the adventitial network takes three months to regenerate.

On two occasions the authors performed a second periarthral sympathectomy six and fourteen months respectively after the first one and on the same side as the first one. In both cases the vascular effect of the second operation was as pronounced as that of the first. On microscopic examination the sheath removed at the second operation was found to be formed of dense connective tissue containing numerous Remak fibers irregularly distributed. However the histological appearance is not an accurate criterion of the functional value of regenerated fibers.

The authors report two clinical cases of neuroma formed after section of the rami communicantes of the stellate ganglion and ablation of the superior cervical ganglion. In one it caused an extreme ptosis which was relieved only when the patient turned her head to the left the side on which the intervention was done and a sensation of burning in the eye so intense as to prevent any work requiring close attention. In the other case it caused a return of the crises of angina pectoris for which the operation was done. Removal of the neuroma resulted in a cure in each case. Neuromata forming after section of the sympathetic are usually silent but endanger the success of the operation.

PAGE

MISCELLANEOUS

Wilkinson H. J. The Innervation of Striated Muscle. *Med J Australia* 1929 11 768

The author has undertaken a general and extensive survey of the innervation of the striated

muscle in representatives of the principal tetrapod groups namely amphibia reptilia the lower mammals and man. His purpose is to throw more light on this problem and particularly to seek evidence in support of Hunter's theory that one group of muscle fibers is supplied by somatic nerves and another group by sympathetic nerves.

The tissues were stained by the intravital methylene blue method of Ehrlich and by the gold chloride method of Ranvier with modifications in each case and were mounted after teasing cutting and pressing. The findings are shown by photomicrographs. In addition to the literature Wilkinson has studied the laboratory material of Boeke Agduhr and Bielschowski. He summarizes this article and his conclusions as follows:

1 All muscle fibers are innervated solely by somatic nerves that is cerebrospinal nerves. Hunter's hypothesis based on the work of Kulchitsky is therefore untenable.

2 Terminations en grappes that occur in lower vertebrates may be either immature form of motor terminations or afferent not sympathetic endings as was formerly thought. The observations on these terminations seem to suggest that the bead like ends of the terminal branches of an axon represent the growing ends of nerves.

3 The muscle spindles are found to have both sensory and motor innervation and the somatic motor innervation of the intrafusal fibers both in the lower vertebrates and in mammals is confirmed.

4 Negative findings are reported with regard to the sympathetic innervation of striated muscle fibers and a criticism of Boeke's and Agduhr's original preparations is given.

5 The view is advanced that in striated muscle tissue sympathetic nerve supply only the blood vessels and are concerned only with regulation of the circulation.

6 The possible mode of action of the sympathetic and vasodilator nerves is also described.

7 The plurisegmental control of muscle fibers is discussed and new evidence is presented.

In an appendix there is a discussion on the innervation of the gut and the control of peristalsis.

KURT H. BOECK, M.D.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

King E S J Postoperative Fat Necrosis of the Breast *J College Surg Australasia* 1929 11 233

In the case of an obese woman with large pendulous breasts a mammary tumor was removed and microscopically diagnosed as 'pre cancerous mastitis'. After healing two hard, irregular, painless lumps appeared in the scar just below the skin. These were adherent to the skin but free from the deeper tissues. The nipple was retracted. The breast was amputated.

Microscopic study of the nodules showed the typical picture of traumatic fat necrosis: degenerated material fatty acid and cholesterol crystals round-cell infiltration fibroblastic and endothelial proliferation many 'fetal' fat cells and two types of giant cells—a foreign body type with large oval nuclei, centrally placed and a fat giant cell type with a more definite cell outline, abundant protoplasm containing fat, and fewer small round darkly staining nuclei.

There were therefore two degrees of changes involving the fat tissue of the breast: (1) a true traumatic fat necrosis with death of the adipose tissue, and (2) a chronic inflammatory change with hyperplasia of the fat cells resulting from some irritant.

An analysis of the pathological progression in all cases of fat necrosis demonstrates that necrosis due to injury of tissue occurs first. Secondly fatty acids and cholesterol set up a reaction of chronic inflammatory and proliferative changes. This is followed by repair and replacement of the fatty tissue by fibrous tissue which results in hard nodules and nipple retraction. J DANIEL WILLIAMS M D

Marsh M C Spontaneous Mammary Cancer in Mice *J Cancer Research* 1929 23 313

This article is based on a study of spontaneous mammary cancer inbred in the albino house mouse for a period of years at the New York State Institute for the Study of Malignant Disease. The findings of such studies show that the tendency to develop malignant tumors is a very fundamental and powerful one which is resistant alike to measures to diminish it and measures to increase it. Its exhibition in generation after generation gives the impression that it is strongly hereditary. The tumors grow unrestrained by any medication that does not strike also at the life of the animal itself.

The mice studied in the investigations reported by Marsh came from the Lathrop-Loeb stock which produces only adenocarcinoma of the mammary gland in the female. The males transmit the tendency, but do not develop the tumor. In Strain 3,

tumors developed in from 85 to 93 per cent of the females. They appeared between the fifth and the twentieth month of life and reached their highest incidence in the eighth month. When the females were prevented from breeding the neoplasms occurred at a much later age period and their incidence was reduced. For the maximal development of mammary tumors it was necessary for the ovaries to function in breeding.

The maximal (corrected) incidence of tumors in Strain 3 was 94 per cent. There was a diminution of tumor yield when certain foods were given but no conclusions were reached as to which factors were of importance.

The tumor is an adenocarcinoma of the mammary gland. About half of the mice had multiple tumors. This incidence of multiple tumors is higher than that reported by others. Seven of the tumors were accredited to one host. In one third of the mice the tumor disseminated. The dissemination occurred almost always to the lungs occasionally to the liver or lymph nodes and rarely to the spleen. The percentage of mice having metastases was increased by repeated vigorous massage.

In Strain 1 which was developed from the same stock as Strain 3 but differed physically in being lighter and more slender the tumors were firmer ulcerated differently and developed later and less frequently than in Strain 3. Their incidence was 55 per cent. These differences persisted uniformly over years of continuous breeding and were evidently a part of the inherited tendency. Some form of heredity evidently controls the exhibition of tumor tendency just as it does the other characters admitted to be hereditary. A mendelian interpretation seems probable but there are so many environmental and other complicating factors that genetic interpretation of tumor origin is obscured.

Tumor origin is favored by complete nutrition and is inhibited by malnutrition and intercurrent disease (parasitism unidentified infections etc). Tumors develop most frequently in the most robust, heaviest, and fully nourished individuals.

All mice harbor nematode parasites in the intestine. A strain bred free from helminths showed no diminution in the incidence of spontaneous mammary tumors. HARRY C. SALTSTEIN M D

Pianese F Is the Histological Picture of So Called Carcinomatous Mastitis Always the Same? (La così detta mastite carcinomatosa presenta sempre lo stesso quadro istopatologico?) *Arch di ostet e ginec* 1929 xxxvi 693

The term "carcinomatous mastitis" is used to indicate a form of tumor of the breast the chief characteristics of which are a very rapid clinical course

and symptoms which are quite like those of an inflammation. This tumor is rather rare. It is seen usually in women between thirty five and forty years of age. However childbearing and lactation are not the cause as it may develop in their absence. It occurs in an acute and a subacute form. The former generally ends in death in from six weeks to two and a half months and the latter is fatal in about ten months. In both there is apt to be a rapid recurrence in the other breast after operation.

There is considerable disagreement as to the histological nature of this tumor. According to the most generally accepted theory the neoplasm is a carcinoma of very rapid development made up for the most part of very atypical epithelial cells. The cells seem to be of an undifferentiated type and instead of forming tubes as in the ordinary type of carcinoma of the breast they assume a spherical form with the appearance of large alveoli. From histological examinations made in five cases Coca concluded that the neoplasm is a lymphangio endothelioma.

In an attempt to settle the question the author made a very careful study of the case of a woman thirty nine years of age who had a typical acute carcinomatous mastitis. Removal was followed by recurrence in the other breast and death in profound cachexia in a little over a month. Franese describes the histological findings which were those of penithea and concludes that tumors of different types of structure may cause the clinical picture under discussion.

AUDREY G. MORGAN, M.D.

Keynes G. The Treatment of Primary Carcinoma of the Breast with Radium. *Acta radiol.* 1929 2: 393.

During the last five years the author has come to regard treatment of primary carcinoma of the breast with radium needles as preferable to operation. In the period from August 1924 to April 1929 ninety patients were treated with radium.

The dosage employed by Keynes is relatively small (up to 100 mgm.) and the time of exposure is long (seven days or more). The radium is distributed in two main areas: (1) the primary growth and (2) the lymphatic drainage including the pectoral area, the axilla and the infraclavicular supraclavicular and intercostal spaces. The needles are inserted through small stab wounds under nitrous-oxide oxygen anesthesia.

The effect on the primary growth is usually complete after four months. If the tumor has not entirely disappeared at the end of that time it may be necessary to consider further treatment operative or radiological. An extensive operation is never required. As a rule no operation is performed. Enlarged lymph glands usually disappear under radium treatment.

In the first fifty of the cases reviewed histological proof of the nature of the growth was obtained but in the others no specimen was taken as it has been found that cutting into the tumor sometimes results in the appearance of an implantation growth.

Histological evidence of the effect of radium on the tumors has been obtained.

Twenty three of the ninety patients whose cases are reviewed were treated recently. Of the remaining sixty seven forty one had an operable tumor. A good result was obtained in forty five cases twelve of which were inoperable. Patients have remained apparently cured up to four and a half years after the treatment.

Kahn M. On the Question of Pre Operative and Postoperative X Ray Treatment of Breast Carcinoma. *Radiology* 1929 xiii 422.

In a series of 148 cases of carcinoma of the breast with extensive involvement of the glands at the time of operation it was found that surgery failed to cure more than 10 per cent for five years and that so far as cure was concerned the addition of postoperative X ray irradiation was of no marked benefit. However it has been possible by X ray treatment alone or in combination with colloidal lead to relieve pain and produce recalcification in metastatic bone lesions.

Pain is an indication for X ray treatment whether metastasis can be demonstrated or not. Deep irradiation is of value chiefly after metastasis has taken place. It is then indicated first for the relief of pain and second for the prolongation of life. All cases with either single or multiple metastatic bone lesions should be treated by deep irradiation as soon as possible. The arrest of destruction and recalcification may not be demonstrable for period ranging from several months to a year or two. It is generally advisable to have the patient return at intervals of three months for observation and further treatment.

Bloodgood in discussing this report stated that there is no evidence that irradiation has added to the percentage of cures in cancer of the breast but it is important for the public and the profession to know that irradiation with the X rays or radium or both is the only treatment that offers any relief when recurrence or metastasis produces pain and discomfort. In 100 cases of intravenous lead treatment there was no evidence that lead was at all helpful with or without irradiation. In the early stages surgery offers most.

J. FRANK DOLGUTH, M.D.

Schmitz H. The Five Year End Results in Carcinoma of the Breast. *Radiology* 19 9: 302.

Schmitz reviews 250 carcinomata of the breast. One hundred and seven were primary and 143 were recurrent. Good result over a period of five years were obtained in 27.1 per cent of the cases of primary tumors and in 16.8 per cent of those of recurrent tumors. The treatment was as follows:

Primary tumors (1) single limited freely movable growths—surgery (2) multiple limited freely movable growths with or without inferior axillary gland involvement—surgery followed by irradiation (3) movable tumors of the breast with superior

axillary gland invasion and adhesion to the skin or the pectoralis muscle—irradiation followed by surgery (4) rigid fixation to the pectoralis muscle or axillary structures or ulceration of the skin or supraclavicular node involvement—palliative treatment and irradiation to check the growth and relieve pain

Recurrent tumors (1) local freely movable recurrence—irradiation followed by surgery, (2) regional freely movable axillary gland recurrence—irradiation followed by surgery (3) local and regional but freely movable recurrence—irradiation followed by surgery (4) fixed local or regional recurrence or ulceration of the skin or supraclavicular gland involvement—palliative treatment and irradiation to attempt to check the growth or relieve the pain

Irradiation should not be given after operation until complete healing of the operative wound has occurred. After irradiation operation should be delayed for from eight to ten weeks otherwise primary union of the tissues will be delayed and infection will be more apt to occur

FRANK B. BERRY, M.D.

TRACHEA, LUNGS, AND PLEURA

Hudson W. A. and Jarre H. A. Functional Studies of the Tracheobronchial Tree with the Aid of the Cin Ex Camera. *Brit J Radiol* 1939 12: 523

After a review of the literature on the function of the tracheobronchial tree the authors briefly describe a new camera the Cin Ex camera by means of which they are able to take from one to four X-ray pictures per second. Their studies were made on dogs, a normal human being, a patient with bronchiectasis and two patients with asthma.

They state that X-ray pictures can be made on film bands as fast as from one to four per second with the ordinary X-ray laboratory equipment. They believe that in certain cases functional studies made in this way will aid in the selection of therapeutic measures. They conclude that there is a true peristaltic mechanism in the tracheobronchial tree which is disturbed by long standing bronchial infection and is intensified in conditions of an asthmatic nature. They found that in normal persons lipiodol is forced into the alveoli by a suppressed cough and that in patients with emphysema it flows into the alveoli readily.

LOUIS P. GAMBLE, M.D.

Atacklin C. C. Functional Aspects of Bronchial Muscle and Elastic Tissue. *Arch Surg* 1929 123: 1212

The wall of the entire bronchial tree is made up of a smooth muscle network infiltrated with elastic tissue. It is a continuous branched contractile myo-elastic tube which is built up in a characteristic and systematic manner and extends throughout the entire system of airways from the trachea to the fine terminal bronchioles and alveolar ducts and the

mouths of the alveoli but not into the alveolar walls. The alveoli open into the alveolar ducts like cups with rims encircled by the muscle and elastic fibers which suggest a sphincter that never completely closes but merely widens and narrows. The alveolar walls are free from muscle fibers except a very few which dip into them from the alveolar ducts. The elastic connective tissue, like the muscular tree is also a continuous system from the larynx to the alveoli but it does not terminate at the alveolar mouths. Fine fibers and delicate strands are continued on into the alveolar walls themselves. The direction of the muscle fibers as well as that of the elastic fibers is mainly circular but in many instances is oblique or longitudinal. Such a system is obviously built to permit changes in the length and the width of the individual tubes.

The muscles of the bronchial tree are involved in changes of length, changes of width, and peristaltoid movements. Examination with the X-ray bronchoscope or other means reveals an elongation and widening of the air tubes on inspiration and a shortening and narrowing on expiration. This is the general principle underlying ventilation of any tubular system. The lung could not be inflated if the bronchial tubes were rigid. Movement of the bronchial musculature is indissociable from respiration. Inspiration is the inflow of air under atmospheric pressure. The air tubes stretch and dilate and the air chambers fill. The alveoli change from the shape of a cup to that of a saucer simulating the opening of a sphincter. On expiration the action is reversed consisting of a progressive contraction beginning at the periphery of the air system and sweeping toward the trachea, the air volume being thereby diminished. Therefore in this action the myo-elastic bronchial tree functions as an active deflating agent.

As demonstrated by others the bronchial musculature also engenders a peristaltoid movement in the form of a continuous wave travelling from the periphery toward the center and freeing the tubes of harmful exudates.

The nervous control of the bronchial musculature comes from the vagus and the sympathetic system and consists of both dilator and constrictor fibers. It forms a part of an elaborate reciprocal system which brings about a coordination between the intrapulmonary and extrapulmonary respiratory musculature.

The article is supplemented by numerous illustrations of the author's material and that of Baltusberger (*Ztschr f Anat u Entw* 1921, 121: 259).

J. DANIEL WILLEMS, M.D.

Phillips E. W. and Scott W. J. M. The Surgical Treatment of Bronchial Asthma. *Arch Surg* 1930 121: 1425

Isolization of the chest wall and within the past six years surgical attempts to influence a possible nervous control of the paroxysms are the measures available in bronchial asthma after the failure of

medical treatment. Three factors have been considered as possible causes of the decrease in the caliber of the finer air passages with its resulting dyspnoea: (1) spasm of the intrinsic muscles, (2) mucosal swelling, and (3) abnormal secretion. It is not known whether the partial stenosis is chiefly in the small bronchi or in the bronchioles and the underlying mechanism which produces the paroxysmal dyspnoea is not definitely known.

The rôle of the extrinsic nerves of the lung in an asthmatic paroxysm is no clearer than the local condition in the air passages that produces the stenosis. There seems to be a dysrhythm, a bilateral nerve supply to each lung, the tracts of which are carried through the vagus and the sympathetic systems. It is generally believed that the vagus is the main bronchomotor nerve and that many bronchostenotic fibers are present also in the sympathetic. An attractive theory without many supporting facts is that the sympathetic fibers are the afferent side of a reflex arc.

Operations on the extrinsic nerve supply include unilateral and bilateral cervical sympathectomy and vagotomy. In a few cases unrelieved by operation on one system relief has resulted from operation on the other system, but the majority of secondary operations have been unsuccessful. Cases in which the dyspnoea is due to cardiac insufficiency or glandular involvement at the hilum are entirely unsuited to operation.

Kuemmell in 1916 reported the isolation and section of the posterior ramus which, according to Brauer's experimental work, removes all extrinsic control of bronchiolar constriction in one lung from both systems and both sides. So far as could be ascertained, this has been done only three times and has had good immediate results.

Operations on the chest wall consist in immobilization of the wall of the emphysematous type of chest. Freund, who first introduced the method, performed a unilateral chondrectomy to allow increased expansion. This procedure still seems to be best suited for this type of case. Of the various measures used to prevent rib regeneration, electrical and chemical cauterization seem to be the most rational.

Miscellaneous procedures include surgical treatment of nose and throat infections and the correction of tracheal compression by the removal of an enlarged thyroid. Roentgen therapy may influence so-called bronchial asthma by reducing the size of enlarged tracheobronchial glands. Splenectomy has been suggested by Henck, but no information is available concerning this procedure.

Approximately 50 per cent of the severe cases of bronchial asthma have been definitely benefited by surgical procedures and a few have been cured. Although interruption of either the vagus or sympathetic system alone has resulted successfully, it is considered more logical to sever both systems at the posterior pulmonary plexus. The authors cite a case in which the latter method was used and improvement has been present for eight months. Operation

on the autonomic nervous system is still in the experimental stage. Mobilization of the chest wall in suitable cases should precede any attempt at intervention on the autonomic system.

E. S. PLATT, M.D.

Coryllos P. N. and Birnbaum G. L. *Bronchial Obstruction: Its Relation to Atelectasis, Bronchopneumonia and Lobar Pneumonia*. *Am. J. Roentgenol.* 1919, xxi, 401.

Bronchial obstruction when complete interferes with ventilation, circulation, and free drainage of the pulmonary area corresponding to the obstructed bronchus. Atelectasis, circulatory disturbances, and pulmonary cellulitis result. The clinical symptoms and physical signs of bronchial obstruction are variable, but there are definite and constant changes which can be reliably demonstrated by roentgenography and bronchoscopy.

The authors carried out a series of experiments on dogs. In one bronchial obstruction was produced by a rubber balloon introduced by bronchoscope into a selected bronchus and the balloon was filled with radio-opaque sodium bromide solution to form a complete obstruction which could be interrupted at will. In the other pneumonia was produced by insufflating a culture of pneumococcus by means of an atomizer through a bronchoscope into a bronchus. In both roentgenograms of the chest were made and studied.

A striking similarity of the roentgenograms in both conditions was demonstrated. There was haziness of the involved lung with elevation of the diaphragm on the involved side and displacement of the mediastinum toward the affected lung. Extraction of the balloon (after from six to twenty-four hours) was followed by aeration of the affected lung and gradual return of the diaphragm and mediastinum to normal. Exactly the same phenomena occurred in the spontaneous cure of the experimental pneumonia. This parallelism extended to other signs and symptoms and to pathological autopsy findings. The principal difference was a general toxicity in the animals with pneumonia which was almost entirely absent in the animals with bronchial obstruction.

Upon these similarities the following theory of postoperative atelectasis (pneumonia) is based.

Anesthesia reduces the vital capacity and causes stasis and the accumulation of bronchial secretion, irritation of the bronchial mucosa, and secondary infection, i.e., bronchitis. The obstructing exudate is then either expelled from the lung (by cough, etc.) or complete obstruction of the bronchus takes place. The trapped alveolar air is absorbed and atelectasis follows. Cellulitis and pneumonia progress. In pneumonia the same pathogenesis is found. In addition, a severe toxicity will appear because the infecting organism is a newly introduced pneumococcus of high virulence instead of the saprophytic bacteria of low virulence which are usually present in bronchitis. In both conditions cure results by crisis or lysis as soon as the lung is drained by aeration.

This theory puts lobar pneumonia in the same class with other infectious processes occurring in closed and undrained spaces. The objection to it, that frequently at autopsy no bronchial obstruction is found in atelectasis or lobar pneumonia, is answered by the evidence from many bronchoscopic observations in human cases in which the bronchus corresponding to the affected area was constantly found occluded by exudate.

In direct contradistinction to the classical conception roentgenograms of massive lobar pneumonia in man give proof that in unilateral pneumonia the more extensive the involvement and the greater the number of lobes affected the more marked will be the displacement of the heart and trachea toward the affected side and the elevation of the homolateral diaphragm. This means that the consolidated lung is smaller not larger, than the normal. Proof of this is given by the fact that when the trachea of a pneumonic dog is clamped before the thoracic cavity is opened and the lungs, heart and trachea are then removed together the consolidated lung is always smaller than the healthy lung.

The circulatory changes in atelectatic and consolidated lungs were studied by means of injections into the jugular veins of living animals. Iodized oil and India ink were used. Roentgenograms after the injection of iodized oil give not the slightest evidence of impairment of the arterial tree in the lung, whereas microscopic sections of lungs injected with India ink showed impairment of the capillary circulation proportionate to the degree of alveolar collapse or shrinkage.

In both atelectasis and pneumonia there are similar disturbances in the gaseous exchanges—an increase of carbon dioxide in the arterial blood due to insufficient ventilation. Hyperventilation with a mixture of from 5 to 10 per cent carbon dioxide in air seems to have a specific action not only in stimulating the respiratory center, but also in reducing the pH of the exudate and thus interfering with the development of the pneumococcus.

It is claimed that lobar pneumonia is a pneumococcal atelectasis due to bronchial obstruction by mucous exudate infected with virulent pneumococci. Atelectasis (postoperative pulmonary complications) differs only in the type of low virulence organism, *Pneumococcus Group IV*. The evolution of the disease syndrome is bronchitis—obstruction—atelectasis—pneumonia.

A bibliography of 177 references is appended.

J. DANIEL WILKINS, M.D.

Coryllos P. N. and Birnbaum G. L. The Circulation in the Compressed Atelectatic and Pneumonic Lung (I pneumothorax Apneumatosus Pneumonia). *Arch Surg* 1929 xix 1346.

In this article a new method for the study of the arterial and capillary circulations in the lung is presented—intrajugular injections of iodized oil for the arterial circulation and intrajugular injections of Ringer's solution and India ink for the capillary

circulation. As the result of their studies with this method the authors draw the following conclusions:

1. Circulation and ventilation of the lung are parallel functions, when ventilation is impaired circulation is decreased and *vice versa*.

2. In the compressed atelectatic (apneumatic) and consolidated lung the circulation is progressively impaired. This impairment is due to and regulated by, the degree of collapse of the alveoli and not to capillary thrombosis or capillary compression by alveolar exudate as has been believed heretofore.

3. Lobular pneumonia is comparable to lobular atelectasis and lobar pneumonia to lobar atelectasis. The circulatory changes are exactly the same and are related to impaired ventilation due to occlusion of a lobular or lobar bronchus with exudate. Their clinical severity depends on the virulence of the microbes concerned.

4. In pneumonia and atelectasis strikingly similar pictures are obtained so far as the evolution of circulatory impairment is concerned.

5. Only the capillary circulation is involved. The circulation in the pulmonary arterial tree is not affected. The capillary impairment is not complete.

6. Changes observed in the size of the alveoli in lobar pneumonia offer new proof in favor of the view that bronchopneumonia and lobar pneumonia should be considered as the infectious variety of patchy or lobar atelectasis respectively.

EMIL C. RODITSCHER, M.D.

Dyke C. G. and Sosman M. C. The Postural Treatment of Postoperative Massive Atelectatic Collapse. *Surg Gynec & Obst*, 1929 xlix 752.

This article is based chiefly on a study of four teen cases of postoperative massive atelectasis occurring at the Peter Bent Brigham Hospital, Boston during the period from 1925 to 1928 inclusive.

The condition develops with about equal frequency in both sexes and has very little relation to age. In ten of the cases reviewed it occurred in the first three months of the year and in six of these it developed in March. The type of operation seemed to play no part in its causation. In eleven cases the anesthesia was induced with ether alone, and in the others with nitrous oxide and oxygen supplemented by ether. In thirteen cases the condition occurred in the right lung and in ten of these in the lower lobe of that lung.

The authors discuss the mode of production of massive atelectasis, the morbid anatomy, symptoms, physical signs, complications, relapses, clinical varieties, prognosis, diagnosis, prophylaxis and treatment. Brief case reports are given together with roentgenograms made in five cases.

The following conclusions are drawn:

1. Obstruction to the air passages is essential for the production of the condition. The obstructing material is thick, tenacious mucus.

2 Usually many secondary factors are involved such as a decrease in the vital capacity, an increased cough reflex, infrequent postural change during and after the operation and limitation of thoracic and abdominal mobility by the operation.

3 The condition is not a reflex nervous phenomenon.

4 It does not occur contralateral to the side operated upon unless the patient lies on his side during the operation as in renal operations.

5 In the treatment, the Sante maneuver is very efficacious.

6 Hyperventilation of the lungs with carbon dioxide and oxygen should be done at the end of the operation and during the first forty-eight hours thereafter.

7 The patient's position should be changed frequently during the first few days after the operation and the use of sedatives should be restricted.

8 The mortality from the condition is very low.

CARL R. STEINKE, M.D.

Bérard and Lardennois. The Surgical Treatment of Pulmonary Tuberculosis (Traitement chirurgical de la tuberculose pulmonaire). *Presse méd.* 1929 xxxii 1332.

The authors limited their study to operations performed to collapse the lung—thoracotomy, phrenicectomy, separation of the parietal pleura and apicolectomy. About 5 per cent of cases of pulmonary tuberculosis are suitable for surgery. The results depend upon the degree of collapse obtained and the tendency of the pathological tissue to undergo retraction.

Thoracoplasty is rendered less dangerous if it is done in several stages and in a sanatorium. It may be performed only if the patient has maintained good general resistance, which is seldom the case when the condition is active but is often the case in fibrous inactive tuberculosis of long standing. While pneumothorax may be employed during the active stage of the condition, thoracoplasty must be deferred until the infection has become quiescent. Unilateral of the tuberculosis is a much more strict requirement for thoracotomy than for pneumothorax and phrenicectomy. Phrenicectomy gives only partial collapse. It is rather an accessory measure. On account of the greater latitude allowable as regards both unilaterality of the infection and general resistance, phrenicectomy is applicable in a much larger number of cases than thoracoplasty.

Thoracoplasty is indicated in cases of unilateral and inactive ulcerofibrous lesions in which pneumothorax is impossible, unilateral fibrocaceous tuberculosis and fibrous forms with hæmoptysis in which the general resistance is good, also as a complement to abandoned or inefficient pneumothorax. Neither age nor pregnancy is a contra-indication. The operation gives its best results between the ages of fifteen and forty years. It is contra-indicated by organic disturbances, especially cardiovascular in

sufficiency, dyspnoea, cyanosis and laryngeal, renal and intestinal infections.

The indications for phrenicectomy differ from those of thoracoplasty only in extent. Phrenicectomy is valuable in cases of serious ulcerous lesions stabilized or not which develop with a *ret acute* tendency. It is indicated also in fibrocaceous or caseous tuberculosis of average severity when pneumothorax has failed and thoracoplasty is inapplicable. Strict unilaterality of the infection and good general condition are not necessary. Patients with lesions in the base are no better subjects for phrenicectomy than those with lesions in the apex. As the success of the operation does not depend upon the degree of ascent of the diaphragm, it appears that the immobilization of the lung plays a more important role than the reduction of its size. The authors consider phrenicectomy a preliminary stage in the thoracoplasty. It serves also as a functional test of the opposite lung and may give results in cases of recurrent hæmoptysis.

In 95 cases operated upon before January 10, 1929, including 39 treated by thoracotomy (23 of which were operated upon in several stages) and 56 treated by partial thoracotomy, very good results were obtained in 22, good results in 18, fair results in 7, and no results in 2. Eighteen of the patients died soon after the operation and 25 died later. The results in 6 cases are unknown. Of 100 phrenicectomies 53 gave positive results.

PAGE

Illenthal H. Direct Drainage of Tuberculous Pulmonary Cavities. *Arch. Surg.* 1929 xix 161.

Until recent years the author considered unwise if not dangerous to open a tuberculous cavity of the lung, but experience in three cases showed that the procedure may be free from hæmorrhage and that the tendency toward the formation of a permanent fistula is in proportion to the degree of collapse of the walls of the cavity. The cavities may be drained directly through the wall of the chest or into an associated open empyema cavity. Surgical openings into tuberculous cavities in the lung show a strong tendency toward spontaneous healing.

WILLIAM E. SHACKLETON, M.D.

Cole D. B. and Johns F. S. Therapeutic Pulmonary Collapse. *Arch. Surg.* 1929 xix 1193.

Surgical intervention in pulmonary tuberculosis has for its aim compression of the affected lung to obliterate cavities and to put the lung at rest and its blood and lymph circulation. The outcome depends largely on the election of the patients, the type of collapse, the time of operation with regard to the stage of the disease process and the amount of compression obtained.

In cases of moderately advanced pulmonary tuberculosis reviewed by the authors, pneumothorax was followed by favorable results with few complications. Of thirty patients with tuberculous pneumonia or exudative tuberculosis, fourteen became apparently well and able to work, ten recovered

partially, and six died. Five developed pleural fluid, and three, empyema following the operation.

Pneumothorax was used also in the treatment of fifteen patients with tuberculous abscesses of the lungs. By injecting small quantities of air at frequent intervals drainage was facilitated and the spread of the process was arrested. There were four complications of this operation. Pleural effusion occurred in 15 per cent, empyema less frequently and pleural shock and air embolism in two cases each.

After the induction of the pneumothorax the patient was kept at rest in bed for two months or longer and fluoroscopic and roentgenographic examinations were made at frequent intervals.

Phrenic avulsion was done in eighteen cases. Under local anesthesia a portion of the phrenic nerve measuring from 6 to 10 cm was removed through an incision made along the posterior border of the sternocleidomastoid muscle or parallel with and just above the clavicle. Improvement followed in nearly all cases. None of the patients was made worse by the operation.

Thoracoplasty was carried out in fifty one cases of more extensive pulmonary involvement. All of the patients were definitely benefited. The authors emphasize the importance of resection of the upper ribs and complete collapse of the apex.

J DANIEL WILLEMS M D

Andrus W DeW and Wilson J D. The Effects of Closed Pneumothorax and Phrenicotomy on the Cardiorespiratory Function. *Arch Surg* 1929 xix 1205

Dogs anesthetized with barbital and rectal ether were subjected to experimental study of their cardiorespiratory response to closed pneumothorax, phrenicotomy and vagotomy. Data were obtained on the pulse rate, the respiratory rate, the tidal air volume (amplitude of respiration), the oxygen consumption per minute, and the oxygen content of the arterial and venous bloods.

It was found that a dog with an intact cardiorespiratory mechanism responds to a closed pneumothorax of moderate degree by an increase of about 10 per cent in the pulse rate, about 33 per cent in the respiratory rate, about 20 per cent in the tidal air volume, and about 65 per cent in the respiratory volume per minute. The amount of blood circulating through the lungs per minute is increased about 25 per cent and the pulse volume about 15 per cent. A pneumothorax of greater degree causes symptoms of beginning decompensation, as shown by a fall in all of these factors.

In a normal dog a unilateral phrenicotomy produces an increase of about 10 per cent in the pulse and respiratory rates, about 25 per cent in the amount of blood flow through the lungs, and about 15 per cent in the pulse volume. The tidal air volume and the respiratory volume are decreased from 15 to 20 per cent. Bilateral phrenicotomy produces symptoms of beginning decompensation.

A pneumothorax experimentally superimposed in a dog subjected to unilateral phrenicotomy causes symptoms of cardiorespiratory decompensation.

Bilateral vagotomy causes a decrease of about 50 per cent in the respiratory rate and an increase of about 150 per cent in the tidal air volume and 25 per cent in the respiratory volume per minute. The amount of blood flow through the lungs per minute is decreased about 5 per cent and the pulse volume about 9 per cent.

Tolerance to pulmonary compression by pneumothorax is decreased following section of both vagi.

J DANIEL WILLEMS, M D

Matson R C. The Electrosurgical Method of Closed Intrapleural Pneumolysis in Artificial Pneumothorax. *Arch Surg* 1929 xix 1175

The author states that while adhesions are present in the majority of cases of pulmonary tuberculosis selected for pneumothorax treatment he has found that a satisfactory pneumothorax can be established in 40 per cent of the cases. In another 40 per cent the character of the adhesions will prevent the collapse or compression of the lung necessary to provide adequate functional rest or closure of the cavities, and in the remaining 20 per cent pleuritic adhesions will prevent any introduction of gas.

For cases in which no gas can be introduced the phthisiotherapist has come to recognize the value of surgery in the form of phrenicotomy or thoracoplasty.

Pneumothorax will not give a satisfactory result if after several months trial, stereoscopic films reveal the presence of adhesions which are preventing sufficient collapse of the lung. In the treatment of such cases the author considers closed pneumolysis. During the past four years 45 per cent of his cases have proved suitable for this operation. Electrosurgical methods have simplified the procedure and made it relatively safe. The control of bleeding is the most serious problem and requires a knowledge of the character of electrical currents used. Electrosurgical cutting is accomplished without smoke and is followed by minimal tissue reaction.

WILLIAM E SHACKLETON M D

Welles E S. Phrenicectomy in 300 Cases of Pulmonary Tuberculosis. *Arch Surg* 1929 xix 1169

At first phrenicectomy was considered best suited to basal lesions of the lung, but later it was found to give good results more often in lesions of the upper lobe and the apex than in lesions of the lower lobe.

Of the 300 cases reviewed by the author the operation was followed by improvement in 64 per cent.

It was hoped that by a careful analysis of the cases it would be possible to give a fairly accurate prognosis in a given case, but this hope has not been realized. However reasonable assurance may usually be given the patient that the operation will do no harm, if it fails to result in benefit. In only 2 per cent of the cases reviewed were the symptoms

aggravated. A few patients had a transitory annoying dyspnea or temporary digestive disturbance and a few a persistent tachycardia. The only accident in the series of cases reviewed was severance of the thoracic duct which occurred in 1 case.

In 1 case a bilateral phrenicectomy was done in an effort to control persistent hiccough. After the operation there was no increase in the dyspnea and the hiccough stopped permanently.

Exeresis is considered the operation of choice. Cessation of movement of the diaphragm is of more importance than elevation of the diaphragm.

WILLIAM E. SHACKLETON, MD

Holman E. and Mathes M. E. The Production of Intrapulmonary Suppuration by Secondary Infection of a Sterile Embolic Area. An Experimental Study. *Arch Surg* 1929 xix 1246

Pulmonary infected and non infected embolisms were produced in dogs by introducing into the jugular veins lead shot with or without bacteria. At various periods the animals died or were killed. The lungs were injected with a bismuth and gum acacia suspension and roentgenographic and pathological studies were made.

Infected emboli invariably produced marked pathological changes in the parenchyma of the lungs such as hemorrhagic infarction, pneumonia, and abscess formation. Sterile emboli produced little gross evidence of their presence except in the presence of bacteremia or a suppurative process elsewhere in the body. When secondary infection of the embolic area occurred, injection of the bronchial artery with a roentgenopaque substance revealed marked dilatations of the branches leading to the embolic area. This was considered to be of considerable importance in the resistance to infection and the repair of destroyed tissue. The injected pulmonary artery appeared normal even in the presence of massive hemorrhagic infarction.

J. DANIEL WILLIAMS, MD

Van Allen C. M., Adams W. E. and Hirdina L. S. Bronchogenic Contamination in Embolic Abscess of the Lungs. *Arch Surg* 1929 xix 1262

The authors report experiments carried out on dogs to determine the mode of reaction of the lung to embolic and bronchogenic inoculations and the effect of intrabronchial contamination on the character of a pre-existing abscess of the lung.

It was found that the virulence and chronicity of embolic abscesses of the lung could be increased by the insufflation of infectious material into the bronchus. The authors believe that this combination of embolic and bronchogenic inoculation may explain the pathogenesis of the obscure group of postoperative abscesses of the lung and that superinoculation by the aspiration of pharyngeal secretions may be the factor chiefly responsible for the maintenance of postoperative and postpneumonic chronic abscesses of the lung and the recrudescence of bronchiectasis.

J. FRANK DOUGHTY, MD

Van Allen C. M., Adams W. E. and Hirdina L. S. Embolism in Bronchogenic Infection of the Lung. *Arch Surg* 1929 xix 1279

In one group of experiments carried out on dogs the authors studied the effect of a sterile embolus of small size on the parenchyma of the lung. In another group the results of intrabronchial insufflation of infectious material and in a third group the reaction of the lung to a combination of bland embolism and septic insufflation.

They conclude from their findings that abscesses develop much more readily from embolic than from intrabronchial inoculation of the lung and the lung is in general much more resistant to necrosis and suppuration than other tissues. The great vitality of the lung in pyogenic infections is due mainly to its greater blood supply, and elimination of the pulmonary circulation as by embolism reduces the blood supply and tissue vitality to the common level. This hypothesis is applied to explain the pathogenesis of postoperative abscess of the lung especially following sterile operations, postpneumonic abscess of the lung and empyema and relapses in suppurative diseases of the lung in general. Hemorrhagic infarction may have a similar origin.

J. FRANK DOUGHTY, MD

Flick J. B., Clerf L. H., Funk E. H. and Farrell J. T. Jr. Pulmonary Abscess. An Analysis of 172 Cases. *Arch Surg* 1929 xix 1292

In 121 of the 172 cases of pulmonary abscess reviewed by the authors the abscess developed after a surgical operation. The operations were (1) tonsillectomy in 97 (general anesthesia in 88, local anesthesia in 4, type of anesthesia not recorded in 5), (2) an oral operation in 10 (general anesthesia in 7, local anesthesia in 3), and (3) an operation on some part of the body other than the mouth and throat such as appendectomy in 14 (general anesthesia in 8, anesthesia not recorded in 6). In 43 cases the abscess developed after an acute infection of the respiratory tract and in 6 cases it was attributed to an injury of the chest.

The abscess was localized in 1 lobe in 79.3 per cent of the cases, in 2 lobes in 19.5 per cent and in 3 lobes in 1.2 per cent. According to the authors experience the upper lobe is involved most frequently.

The occurrence of cough and fever after an operation especially an operation on the upper respiratory tract should focus attention on the possibility of pulmonary abscess. A diagnosis is established by the findings of physical examination, X-ray examination and bronchoscopy. The chief essential in the treatment is adequate drainage. In many cases this may be obtained by conservative measures which include repeated bronchoscopic aspirations. Surgical intervention is indicated when a cure is not effected within a reasonable length of time by the more conservative measures.

The authors describe the surgical treatment indicated in the various groups of cases.

J. FRANK DOUGHTY, MD

Olich I Y and Ballou H C Experimental Abscess of the Lung Following Ligation of the Pulmonary Artery and Incision and Suture of the Pulmonary Parenchyma *Arch Surg* 1929 xix 1586

In eight of ten dogs, ligation of the pulmonary artery to the right lower lobe of the lung and simple incision and suture of the pulmonary parenchyma of the corresponding lobe was followed by the formation of an abscess of the lung.

Following ligation of the pulmonary artery no appreciable increase in fibrous connective tissue in the lung was observed over periods up to four weeks. The corresponding lobe did not decrease in size and the alveoli did not appear smaller.

Simple incision and suture of the pulmonary parenchyma resulted in a scar which resembled a scar elsewhere in the body and was not followed by the formation of an abscess of the lung. Preincision performed on the corresponding side apparently in no way influenced the end result.

HOWARD A MCKNIGHT M D

Varney F L The Bacterial Flora of Treated and of Untreated Abscesses of the Lung *Arch Surg* 1929 xix 1602

Twenty seven cases of chronic abscesses of the lung were studied with regard to their bacterial flora. Twenty one of the patients were previously untreated. In the latter the organisms found most commonly were streptococci fusiform bacilli bacillus melanogenicus and spirochetes, streptococcus viridans was found more frequently than streptococcus hemolyticus. In the treated patients the fusiform bacilli, spirochetes and bacillus melanogenicus greatly decreased in number or disappeared altogether coincidently with a relative increase in the hemolytic streptococci. The bacterial flora of material from chronic abscesses of the lung showed a remarkable similarity to that of infected tonsils, cervical abscesses and diseased teeth and mucous membranes.

HOWARD A MCKNIGHT M D

Davidson M Intrathoracic and Pulmonary New Growths *Lancet* 1929 ccvii 1181

Davidson states that statistics based on autopsy material from 1854 up to the present time show that there has been an absolute as well as a relative increase in primary malignancy of the lung in recent years.

Nothing more is known as to the cause of cancer of the lung than as to the cause of cancer in general. The average age of persons with cancer of the lung is fifty years. The condition develops more frequently in males than in females and in white persons than in colored persons. It is most frequent in Jews.

The most common malignant intrathoracic new growths are carcinomata, sarcomata and endotheliomata. All carcinomata originate from the bronchial mucosa. They are columnar celled but may become squamous-celled by metaplasia.

The diagnosis of pulmonary tumor is difficult because the early stages are often symptomless. It therefore requires a combination of systematic methods. The history and symptoms include evidence of a uniformly blood stained pleural effusion, hæmoptysis, a localized area of infection in the chest, bronchitis, dyspnea without exertion, cough and expectoration, pain, general weakness and loss of weight. The physical signs may include involvement of the recurrent laryngeal nerve, pressure on other structures and localized dullness to percussion. Roentgenological examination is of paramount importance. This may be combined with the injection of lipiodol which is easily done through the cricothyroid membrane or just below the cricoid into the trachea. The lipiodol will often show the extent and position of the growth. By some surgeons artificial pneumothorax followed by roentgenography is favored. Bronchoscopy and thoracoscopy have proved of value when simpler methods have failed. The final diagnosis may require an exploratory thoracotomy.

Some of the less malignant tumors may be surgically removable. The use of radium has decidedly limited possibilities. J DANIEL WILLEMS, M D

Gray S H and Cordonnier J Early Carcinoma of the Lung *Arch Surg* 1929 xix 1618

The authors report a case of early carcinoma of the lung arising in an alveolar duct. In the literature they were unable to find any reference to an alveolar duct as a primary site.

Evidence is presented to show that multiple nodular carcinomata of the lung may arise from both multiple origins and early metastasis. The early invasion of the lymphatics sends numerous small nests of cells to all parts of the lung. In a lung in which an old inflammatory lesion has resulted in scarring, a large number of lymphatics are blocked and as cancer metastases cannot proceed beyond the scar they grow in the region of the fibrosis.

HOWARD A MCKNIGHT M D

Harmer D and Russell B Radium Treatment of Malignant Disease of the Upper Air Passages *Acta radiol* 1929 x 362

After fifteen years experience the authors are of the opinion that radium alone or combined with surgery gives better results in malignant disease of the upper air passages than surgery alone. In the treatment used by them the implantation of radium needles for a long period is done whenever possible.

Malignant growths of the nasal fossæ or accessory sinuses are approached in various ways but usually by the transpalatal route. The results in cases of sarcomatous growths have been good, six of thirteen patients having remained alive for from three to eight years after the treatment. In cases of endothelioma the results have been less favorable, only two of thirteen patients having survived more than five years. Of thirty four patients treated for carci-

noma eight have survived for from six months to six years nearly all of this group were inoperable.

Malignant growths of the tonsil and the neighboring tissues have been treated with buried radium needles. Improvement follows but very few of the patients have been cured.

Intrinsic carcinoma of the larynx has been treated by implanting radium needles through a window in the thyroid cartilage. The results were very good in twelve of fourteen early cases and in two of nine advanced cases.

Renaud Miget and Petit Maire. The Indications for and Results of Pleurotomy in Purulent Tuberculous Pleurisy (Indications et résultats de la pleurotomie dans les pleurésies purulentes tuberculeuses.) *Bull et mém Soc méd d hóp de Par* 1929 xlv 1264.

Two patients treated for purulent pleurisy by drainage of the pleura were completely cured. In one who was extremely cachectic the pleura remained open for two years and then closed gradually. The other who was treated by oleothorax from the beginning of the disease was in a dying condition at the time of the operation but recovered completely within six months. In a third case a complete cure has not yet been effected. The pleura is still being drained but the general condition is good and the patient is able to live an active life.

Three other patients who were similarly treated died. Two died a few weeks after the pleurotomy and the third in whom the pleura closed up several months after leaving the hospital against advice. In the first two patients of this group there were pulmonary lesions of such extent that they could not have healed. Pleurotomy was not responsible for the fatal outcome.

FACE

Hart D. Empyema. Treatment by Tidal Irrigation and Suction. *Arch Surg* 1929 xix 173.

Hart states that tidal irrigation between an outside reservoir and the empyema cavity prevents obstruction of the tube by washing away obstructing particles when the flow is reversed. The fluid is not run into the chest under pressure but is drawn in by the expansion of the chest during inspiration. Irrigation with a fluid at a tension less than atmospheric pressure through a system that does not become obstructed gives more satisfactory drainage than open thoracotomy. There is less danger of the development of osteomyelitis of the ribs when this method is used than when the rib is cut across. The rapidity of lung expansion can be regulated by suction or the application of slight positive pressure.

This article reports the first thirty-five cases of acute empyema in which continuous tidal irrigation and suction were employed. The patients ranged in age from four weeks to forty-eight years. Twelve of them were two years of age or younger. An initial trocar thoracotomy was performed in all but one case. Two patients had a resection of the ribs later, one for open drainage in the presence of a

bronchial fistula, and the other for the relief of pain caused by contact of the tube with the intercostal nerve. In one of the two cases in which a rib was resected for drainage the wound was closed tightly about the tube and in the other it was closed by a rubber dam and suction. In both the cavity was rapidly obliterated.

The macro-organisms present varied widely but the method of treatment was well suited to all types of infection. The irrigation was equally satisfactory for thick and thin pus. Even coagulated fibrin and exudate came out without obstructing the tube unless the cavity was suddenly flooded with it. The empyema cavity was kept cleaner than by any other method of treatment.

The average time of closure of a sinus holding 5 cc was twenty-one days. Dressings were reduced to the minimum. Frequently, no dressing was done from the time of operation until the cavity had closed to a small sinus, (from thirteen to thirty days). Leakage about the tube was rare even when irrigation was continued for from two to three months. Obstruction to the tube occurred only in occasional cases and was usually caused by a thick exudate which was rubbed off the pleura. In one case it was caused by elevation of the diaphragm with adhesions to the wall of the chest which closed over the end of the tube. After removal of the tube the sinus closed within an average of five days.

No patient had a draining sinus at the time of discharge. In uncomplicated cases there was a rapid fall of the temperature to normal. Many patients had a complication unrelated to the empyema which caused a febrile reaction. At times this persisted after the empyema had healed and delayed the final removal of the tube. The only complication related to the method of treatment was osteomyelitis of the ribs in two cases. No patient developed pocketing or abscesses along the drainage tract.

Cases of empyema caused by the streptococcus were treated by early operation, rapid recovery followed with no unfavorable complications due to the method of treatment. The seven patients with a bronchial fistula recovered as rapidly as those with simple empyema. With the expansion of the lung the fistula closed within the first few days even a fistula which had been present for eight months.

In the cases of children two years of age or younger the mortality was 9 per cent. This compares favorably with the average mortality of 20 per cent in cases treated by resection of a rib and 50 per cent in those treated by trocar thoracotomy in the preceding fifteen years. The results in three cases of chronic empyema were most satisfactory and suggest that empyema cavities of long duration may be obliterated with or without thoracoplasty. Recovery was rapid. Except in one case there was no persistent deformity of the chest. Frequently there was even no thickening of the pleura. Of the thirty-five patients with acute empyema, twenty-nine recovered. The six who died had an overwhelming infection at the time of operation. *JACOB M. MORRIS, M.D.*

HEART AND PERICARDIUM

Allen D S, and Graham E A The Effects of Pressure on the Heart with Reference to the Admissibility of Decompression of Greatly Enlarged Hearts an Experimental Study *Arch Surg* 1929 xiv 1663

In experiments carried out on twelve dogs the authors found that whenever the extracardiac pressure was increased for a considerable period of time there was a decrease in the efficiency of the heart which was manifested by a fall in the mean blood pressure in the systemic circulation and a decrease in the pulse pressure. In normal animals it was soon compensated for by changes occurring in the arterial system.

From these findings the authors concluded that the human heart is less efficient when it is enlarged sufficiently to be pressed upon continuously by the bony framework of the thorax and that decompression of such an enlarged heart should increase its efficiency. In the cases of two patients with greatly enlarged and chronically decompensated hearts the authors performed an operation for the purpose of effecting decompression. In neither case was there any clinical evidence of an adhesive mediastinopericarditis. After the operation both patients showed marked temporary improvement but ultimately succumbed. In one case however death was due not to the cardiac condition but to an acute pneumonia which developed three months after the operation. Even during the pneumonia there was no oedema or other sign of cardiac decompensation. In this case in which the operation resulted in more benefit than in the other case the pericardium was opened but as it was found not thickened decortication was not performed. Accordingly the beneficial result seems to have been due entirely to the decompression.

JACOB M. MORA M.D.

Alexander J Macleod A G and Barker P S Sensibility of the Exposed Human Heart and Pericardium *Arch Surg* 1929 xiv 1470

The response of the human heart and the parietal and diaphragmatic pericardium to various stimuli directly applied were determined in the case of a patient whose heart was exposed by pericardiostomy for suppurative pericarditis.

The ventricles were insensitive to light touch. Rubbing was interpreted as pressure. Heavy pressure and pricking with a needle were interpreted as touch. Tension on the left ventricular wall caused no pain. Heat of from 130 to 140 degrees F and cold of from 40 to 50 degrees F were not identified. The application of tuning forks did not produce a sensation of vibration. Electrical stimuli caused pain only when extrasystoles occurred. Two blunt points of pressure simultaneously applied from 2 to 3 cm. apart on the right and left ventricles were identified as two points. Two points of pressure on the right ventricle were constantly said to be one

point, and one point of pressure on the left ventricle was said to be two points.

The diaphragmatic pericardium did not feel light touch. Heavy pressure was interpreted as a feeling of pressure and once as slight pain. Heat, cold and vibration were not identified.

The parietal pericardium gave a sensation of pressure when pressure was applied to the inner surface of its posterior and left posterolateral walls. Pressure applied forward against the anterior pericardium and thoracic wall caused severe local and referred pain. Pain was produced by sweeping the finger around the pericardial cavity and by pinching, pricking and scratching the inner surface of the pericardium. Heat and cold were not identified.

With the exception of pressure against the anterior pericardium, none of the stimuli applied to the heart or pericardium caused referred sensation. Pressure against the anterior pericardium caused reference of pain to the chest or abdomen.

Only two reflexes were noted in connection with any of the stimuli applied. One was the activation of coughing on irrigation of the pericardial cavity and the other which may have been wholly or partly voluntary was the 'squirming' of the body and extremities on painful stimulation of the heart or pericardium.

No conclusions were reached as to the nerve paths concerned in the production of the sensations.

F S PLATT M.D.

Churchill E D Decortication of the Heart (Deform) for Adhesive Pericarditis *Arch Surg* 1930 xiv 1457

Adhesive pericarditis interferes with the heart action by causing the formation of adhesions to the wall of the chest or contraction of the thickened pericardium. In the first condition—mediastinopericarditis—systolic contraction is interfered with by fixation of the chest wall and the resulting distortion probably produces a relative valvular insufficiency. The removal of the cartilaginous or bony portions of the ribs overlying the heart relieves the heart of the strain. This is the cardiolysis of Brauer more correctly called 'thoracocolysis precardiaca'. In the second condition—concretio pericardii—the heart cannot expand in diastole to receive the inflowing blood and venous stasis results particularly in the inferior caval system. All degrees of transition between the two types are found. The difference is due more to the degree of contraction than to the type of adhesion.

The first type of adhesions may progress to the point of producing decompensation with symptoms of cardiac passive congestion. The condition is characterized by retraction of the chest wall with every systole and bulging of the chest wall during diastole. A marked thrill indicates a powerful heart action and competent diastolic filling of the chambers. In the second type there is a striking disproportion between the high degree of cardiac passive congestion and the slight objective cardiac signs. The finding which

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Renaud, Miget and Petit Maire The Indications for and Results of Pleurotomy In Purulent Tuberculous Pleurisy (indications et résultats de la pleurotomie dans les pleurésies purulentes tuberculeuses) *Bull et mém Soc méd d hôp de Par* 19 9 xlv 1264

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The classification of thymus tumors is not yet definite, chiefly because of the uncertainty regarding the histogenesis of the thymus itself. In the author's first case which clinically suggested strumitis the neoplasm was found to be a reticulo-endothelioma. In the second case the tumor was a small celled carcinoma with Hassall's corpuscles.

HERMANN REINBERG (Z)

MISCELLANEOUS

Harrington S W. The Surgical Treatment of Intrathoracic Tumors. *Arch Surg* 1929, **LIX** 16,9

Harrington reports twelve cases of intrathoracic tumors and reviews five cases reported previously in which a transpleural operation was done.

In fifteen of the seventeen cases the tumor was removed completely. In one case complete removal was effected by a two stage operation and in four teen cases by a one stage operation.

In two cases only exploration was performed. The condition was proved to be high grade malignancy by microscopic examination of tissue removed and the lesion was inoperable because of the extensive infiltration into the wall of the chest and mediastinal structures.

In the entire series of seventeen cases there was one operative death. This death occurred from cerebral embolism on the seventh day after the operation. The operative mortality was therefore 5.5 per cent.

The tumor was malignant in eight of the cases. In two of these it was so extensive that only exploration

was possible. In the remaining six cases it was removed completely. In two cases one of malignant endothelioma and one of osteogenic sarcoma, death resulted from metastasis during the first year after the operation. One patient with fibrosarcoma died from metastasis two years and two months after the operation. Two patients are living. In the case of one of these a malignant endothelioma was resected with a portion of the diaphragm and thoracic wall. One and a half years after the operation there was no evidence of recurrence. The other living patient had an osteofibrosarcoma and is free from evidence of recurrence four years after the operation. The remaining patient who had a squamous celled epithelioma died following operation.

The author believes that the operative results in this group of malignant cases justify a more optimistic view than generally is taken in these cases and that they emphasize the importance of early diagnosis.

In the nine benign cases the tumor was completely removed by an operation in one stage. There was no operative mortality and all of the patients were apparently cured. As it often is impossible to determine the operability or the type of the tumor definitely by the methods of diagnosis in present use and as there is reason to believe that a benign tumor will undergo malignant change such as occurred in two cases here reported, it is believed that in all cases of intrathoracic tumor exploration should be carried out unless the clinical evidence indicates that the condition is hopelessly inoperable.

particularly indicates a *serious* *impeded diastole* is the marked distention of the cervical veins. In the upright posture these veins do not empty and in systole and diastole they show a *characteristic* double collapse. Ascites precor may occur even before oedema of the legs. The most striking single characteristic is marked venous stasis with a small heart. In this type of case nothing less than de-liverance of the heart from its cicatricial coat can influence the course of the disease. The author reports a successful operation upon a case of this type.

The symptoms of cardiac failure due to mechanical factors are difficult to differentiate from those due to myocardial weakness. If improvement does not follow rest and the administration of digitalis the mechanical factors may be considered paramount but an underlying myocardial weakness cannot be excluded. Of equal importance is the question of balance between the action of the right and left ventricles. If the left side of the heart is involved in the scar it must be liberated first else the venous stasis is merely transferred from the caval system to the lungs with disastrous results. Fluoroscopic examination is invaluable in determining the extent of involvement of the two sides. Other signs of involvement of the left side of the heart are effusions in the pleural cavities, stasis in the pulmonary circuit and widening of the cardiac shadow to the right.

A review of the literature is presented. Weill in 1895 recognized that treatment of adhesive pericarditis is essentially surgical. Delorme in 1908 first performed decortication of the heart and recommended excision of a portion of the pericardium. In 1902 the simpler procedure devised by Brauer was reported.

Thirty seven cases reported in the literature are reviewed. Death attributable to the operation occurred in seven cases (21.6 per cent). Two (6.2 per cent) of the patients were not benefited by the treatment. In four cases (12 per cent) there was a transitory improvement. In the remaining nineteen cases (59 per cent) the result was excellent and in many there was almost complete relief of the symptoms.

E. S. PLATT, M.D.

Torraca, L. Brauer's Cardiotomy in Adhesive Pericardiomyelitis (La cardiostomia alla Brauer nella pericardiomyelitis adesiva). *Arch Ital di chir.* 1929 XLIV 405.

Torraca reports a case of adhesive pericardiomyelitis in a boy of fifteen years which was associated with cyanosis, dyspnoea, turgor of the jugulars, immobility of the apex, hydrothorax, enlargement of the liver, ascites and oedema. Cardiotomy by sub-pericardial resection of the fourth, fifth and sixth ribs was followed by rapid improvement and twenty two months after the operation the patient was in excellent health.

A table is given which shows the results obtained in eighty four cases treated by cardiotomy which have been reported in the literature. In seventy two the operation was followed by more or less marked im-

provement. Thirty three of the patients are still well after a year, fifteen after two years, seven after three years and five after four years. Thirty of the patients died, four of them soon after the operation and twenty six after varying periods of time from aggravation of the symptoms, recurrence or intercurrent disease.

The author concludes that cardiotomy should always be tried even when the patient enters the hospital in extremis. Brauer's operation consists merely of resection of the ribs. When the sclerotic tissue around the heart forms a rigid shell and the heart movements are not freed even by resection of the ribs, Rehn resects the sclerotic pericardium. This, of course, is a much more serious operation and involves greater danger of injuring the heart. If Brauer's operation does not relieve the heart, Rehn's operation may be attempted as a second stage.

AUDREY G. MORGAN, M.D.

ESOPHAGUS AND MEDIASTINUM

Mayer, J. S. *The Relation of the Aorta to Esophageoscopy.* *Arch Otolaryngol.* 1929 7: 447.

The author states that the Jackson progressive high low positions tend to protect the aorta during oesophagoscopy and that aneurysm of the aorta is not an absolute contra-indication to oesophagoscopy for diagnosis.

Unless a special roentgen technique is used, a pathological condition in the lower part of the thorax of interest to the endoscopist may be overlooked in the ordinary anteroposterior film made primarily to determine the condition of the lungs. In the study of the oesophagus it is desirable to have in addition to the usual oblique and lateral films, an anteroposterior roentgenogram of the chest in which, so far as possible, the detail of structures within the cardiac shadow is brought out.

An elongated tortuous sclerotic aortic arch without aneurysmal dilatation may produce oesophageal compression with symptoms.

When a foreign body lodges in the oesophagus at the site of a stenosis due to aortic pressure it should be cautiously dealt with by endoscopic means.

RALPH B. BETTMAN, M.D.

Alexanderovskij, D. Malignant Tumors of the Thymus (Ueber bösartige Thymusgeschwülste). *Z. für inn. Chir.* 1929 IV 614.

In reporting 24 cases of malignant tumor of the thymus the author reviews the clinical characteristics and histogenesis of these rare neoplasms and in 3 tables summarizes 84 cases of sarcoma, 34 cases of carcinoma and 36 cases of other types of thymus tumors which have been reported in the literature.

The clinical picture of thymus tumors is similar to that of tumors of the mediastinal space and occasionally suggests Riedel's struma. The diagnosis is usually not confirmed until a histological examination is made and Hassall's corpuscles are found.

No effect on blood formation was demonstrable during a total of fourteen days. At the end of that time there were given daily to each of these three patients and to seven others the incubated contents of a normal human stomach recovered after the ingestion of similar quantities of beef muscle. In the three patients mentioned and in five of the seven others comprising in all ten patients so treated there appeared before the tenth day an increase in the immature red blood cells followed by progressive improvement of the anemia entirely similar to that ordinarily observed following the daily ingestion of moderate amounts of liver by similar patients.

It is therefore concluded that in contrast to the conditions in the stomach of the patient with pernicious anemia there is found in the normal stomach during the digestion of beef muscle some substance capable of promptly and markedly relieving the anemia.

The article by CASTLE and TOWNSEND reports a further study of the validity of the hypothesis advanced in the first article by Castle. The results of the following experiments are considered to add greatly to the probability of this hypothesis.

1 To three patients with pernicious anemia were given daily from 150 to 300 c cm. of incubated gastric juice secreted by fasting normal men after the injection of histamin. In two of these cases the gastric juice was incubated for two hours with an indigestible protein. In none of the patients was there evidence of an effect on blood formation within fourteen days.

2 To four patients with pernicious anemia were given daily for ten days in the afternoon, 300 c cm. of incubated fasting gastric juice secreted under histamin stimulation and in the morning 200 gm. of beef muscle incubated in two cases with hydrochloric acid and in the three others with water. In two of these cases no effect on blood formation was observed within fourteen days. In one case a slight effect and in another, a distinct effect was observed. However in all of these cases a much greater effect was seen when similar quantities of gastric juice and beef muscle were incubated together. In a fifth case complicated by cystitis no effect was noted under either set of conditions.

3 To the eight patients just referred to and to two others were given from 150 to 300 c cm. of fasting human gastric juice secreted under histamin stimulation and incubated in the presence of hydrochloric acid at pH 2.5 to 3.5 for two hours with 200 gm. of beef muscle. In all but two of these ten cases the effect upon blood formation was comparable to that occurring with the similarly treated normal gastric contents in the first series of patients. Before the tenth day there was an increase of the immature red blood cells followed by a progressive improvement of the anemia comparable to that ordinarily seen following the daily ingestion by similar patients of from 135 to 225 gm. of prepared liver.

The authors therefore conclude that by some interaction of normal human gastric juice and beef

muscle, both of which have been shown to be individually ineffective a substance can be developed which is capable of promptly and markedly relieving the anemia of certain patients with Addisonian pernicious anemia.

As the experiments reported in the first article of this series demonstrated that the presence of beef muscle in the stomach of the patient with pernicious anemia is incapable of developing such an effective substance it is strongly suggested that the absence of this effect is due to the defective quality of the gastric secretion of the patient with such anemia.

It is believed that the correlation between the production of an effective substance and the presence of a normal proteolytically active gastric juice in contrast to the demonstrable lack of both in the patient with pernicious anemia adds strength to the validity of the original hypothesis regarding the particular nature of the disease.

It is believed that for the first time a relationship between the stomach and the function of the bone marrow of the human being has been demonstrated and that the general belief that the integrity of the stomach is unnecessary for proper body metabolism is brought into question. J. FRANK DOLOREY, M.D.

Starlinger E. More Cases of Recurrent Ulcer Following Extensive Gastric Resection with Comments on the Choice of Secondary Operation Following Resection by the Billroth I Method. (Weitere Geschwulstreaktionen nach Billroth I Resektion nach Billroth's erster Methode.) *Wien klin Wchschr* 1929 XI 905.

In cases of gastric and duodenal ulcer resection seems to be the operation of choice. Nevertheless the number of known recurrences of ulcer after resection is constantly increasing. In addition to a case of recurrence following gastric resection which was previously reported from the Innsbruck Clinic the author reports three others. In two of the four cases the resection was done for callous ulcer and both of the patients died as the result of opening of the duodenal stump. In the third case the resection of a cicatricial stenosis was followed by peritonitis which was also due to the duodenal stump. In the case reported previously in which a terminal lateral gastro-enterostomy was done below the papilla for the purpose of exclusion recovery resulted.

Attention is called to the danger of further resection after the Billroth I operation. According to the literature and the four cases reported in this article the resection of an ulcer recurring after the Billroth I operation is followed by poor results in 26.7 per cent of the cases. However resection is of course necessary in cases of bleeding recurrent ulcer. On the other hand exclusion by the von Eiselsberg method or with resection of a portion of the stomach seems less dangerous and more apt to be successful even though secondary hemorrhage or perforation

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Buchbinder J R Hellman F R and Foster, G G Experimental Peritonitis II The Effect of Hypertonic Dextrose Solution upon Experimental Diffuse Peritonitis *Surg Gynec & Obst* 1929 xlix 783

The authors attempted to produce in animal a peritonitis that duplicated in its etiology and clinical course as much as possible the peritonitis occurring in man. Their experiments were based on the following postulates:

1 Because of discrepancies that would be introduced by the use of cultures the animal's own intestinal tract should be the source of the peritonitis.

2 The peritonitis should range from diffuse to generalized. A sharp distinction must be made between a large localized abscess and generalized peritonitis.

3 The peritonitis must be as nearly as possible lethal but not sufficiently severe to kill the animal in one or two days as infections of such overwhelming virulence cannot be influenced.

The procedure used was as follows:

A segment of bowel of varying size was resected but left attached to its mesentery to insure its viability. Both ends were left open. An end-to-end anastomosis was then made around this open loop and the opening in the mesentery closed. The omentum was wrapped about the suture line of the anastomosis and the bowel with the loop returned to the abdomen. Complete closure was then effected. An open loop of mid ileum 20 in. long was employed.

The following conclusions are drawn:

1 The prognosis of acute diffuse peritonitis is governed chiefly by the rapidity of absorption.

2 The most important factor controlling the rate of absorption is fibrin.

3 Fibrin is diminished or absent in the more virulent cases because of dilution of the exudate.

4 The streptococcus is most commonly identified with this abundant exudate and the accompanying virulent course of the disease.

5 The addition to such an inflammatory exudate of a transudate produced by the intraperitoneal injection of hypertonic dextrose solution produces a more rapid spread of the infection and insures a lethal outcome.

6 It seems probable that an abundance of this exudate serves to prevent adhesion by mechanically isolating the intestinal loops.

7 The results of this experimental study do not agree with the published reports of the similar treatment of peritonitis in man.

CARL R. STEINKE MD

GASTRO INTESTINAL TRACT

Burnberg T L Cardiospasm in the Newborn Infant Report of Three Cases *Am J Dis Child* 1929 xxxviii 1183

Cardiospasm is defined as a spasm of the smooth muscle fibers surrounding the cardiac orifice which results in partial or complete occlusion of the lower end of the esophagus. It is therefore a functional disturbance of neurotic origin causing failure of the lower end of the esophagus to consummate the act of deglutition. The cardiac sphincter is not well defined. As the pressure within the esophagus is low, the cardiac sphincter seldom undergoes any appreciable hypertrophy.

The three cases reported presented similar symptoms, the chief of which was forcible vomiting beginning with the first feeding, occurring during or soon after nursing and showing no gastric contents in the vomitus.

The diagnosis can be confirmed by roentgen examination. The spasm is easily overcome by the passage of a catheter through the cardia for a number of feedings. In some cases there is an apparent association of the condition with a mild pylorospasm.

HARRY W. FINE MD

Castle W B Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia I The Effect of the Administration to Patients with Pernicious Anemia of the Contents of the Normal Human Stomach Recovered After the Ingestion of Beef Muscle *Am J Med Sc* 1929 cxlvi 743

Castle W B and Townsend W C Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia II The Effect of the Administration to Patients with Pernicious Anemia of Beef Muscle After Incubation with Normal Human Gastric Juice *Am J Med Sc* 1929 cxlvi 764

In the first of the articles CASTLE states that a consideration of the known facts concerning the achylia gastrica of Addisonian pernicious anemia together with the recently acquired knowledge of the effects of liver therapy led to the belief that the disease may possibly be dependent upon an inadequate gastric digestion of protein which permits the development of a virtual deficiency in spite of a diet adequate for the normal man.

The results of observations designed as a preliminary test of this hypothesis are reported and are believed to be consistent with it though they do not necessarily prove it.

Each of three patients with pernicious anemia were given daily for a period of ten days between 200 and 300 gm. of finely divided raw beef muscle.

but should make an immediate incision put in a drain and do nothing more. He stated that it is surprising how many patients will recover from this ten minute operation especially if it is followed by the Ochsner starvation treatment.

COLP reported 34 cases of perforated duodenal ulcer from the surgical service of the Beekman Street Hospital, New York. Two thirds were cases of gastric ulcer and one third cases of duodenal ulcer. All of the patients were males. Operation was performed as soon as possible after the patient's admission to the hospital and consisted of simple closure of the perforation. There were 2 deaths a mortality of 6 per cent. One of the patients died from spreading peritonitis and the other although operated upon under spinal anesthesia, from acute collapse of the lung occurring within twenty four hours after the operation.

MANUEL E. LICHTENSTEIN, M.D.

Vaughan, R. T. and Singer, H. A. The Value of Radiology in the Diagnosis of Perforated Peptic Ulcer. *Surg., Gynec. & Obst.* 1929, LIX, 593.

Vaughan has been interested in the X ray diagnosis of perforated peptic ulcer for some time and in previous publications has reported twenty nine cases in which such a diagnosis was made. This discussion is based upon the twenty nine previously reported cases and forty three others making a total of seventy two in which a roentgen examination was made primarily to determine the presence of air in the peritoneal cavity.

The first case in which the procedure was employed by the authors was seen in 1921. The authors believe that the chief reason why the method is not universally employed is that surgeons do not realize its value. The objection that it may cause a loss of time in cases of acute abdominal conditions is not valid because its execution requires only a few minutes. The authors advocate that the patient be taken to the X ray room on his way to the operating room. They examine the patient in the upright position and also in the left lateral position. The left lateral position is chosen because it permits the gastric bubble to occupy the juxtapyloric area in which over 90 per cent of ulcer perforations occur and because in this position further leakage of gastric liquid contents is prevented whereas the escape of air is permitted. It is unnecessary to make a roentgenogram as fluoroscopic examination is sufficient.

The seventy two patients whose cases are reviewed were examined with the X ray shortly after their admission to the hospital. In nine cases in which no free intraperitoneal gas was found, recovery resulted without operation. In fifty four of the sixty three others there was evidence of pneumoperitoneum. In forty nine of those with free intraperitoneal gas the presence of a perforated peptic ulcer was proved by operation or at autopsy. In the five others recovery resulted without operation but subsequent clinical and X ray examinations proved the presence

of a peptic ulcer in all. Of the eighteen cases in which it was impossible to demonstrate the presence of a gas bubble at the time of the patient's admission to the hospital the diagnosis was corroborated by operation in nine. Therefore, 85.7 per cent of the cases showed evidence of free gas. In the first series of fifteen cases reported in 1924 pneumoperitoneum was found in 86.7 per cent, and in the twenty nine cases reported the following year it was found in 86.2 per cent.

The authors believe that pneumoperitoneum is the most constant sign in perforated peptic ulcer. The nine cases in which the symptoms were less marked and in which there was no pneumoperitoneum represented a milder type of condition. Even though in such cases the onset of symptoms is sudden and stormy improvement occurs with early disappearance of the symptoms. These are cases in which the leakage of gastric contents is relatively slight or the openings become closed spontaneously soon after the occurrence of the perforation. To demonstrate a pneumoperitoneum in this type of case the authors place the patient on his left side for one or more hours so that the air within the stomach may rise to the pyloric region. If a perforation is present, gas will escape into the free peritoneal cavity. This procedure is employed only in cases in which there are negative X ray findings and the mild and atypical symptoms are so slight that surgical exploration is not justified. The discovery of gas above the liver and between the liver and the diaphragm with the patient in the upright position is diagnostic of the presence of free air in the peritoneal cavity.

Absence of gas in the peritoneal cavity after the perforation of a peptic ulcer is attributed by the authors to the following factors:

1. Posture. If the patient assumes a right lateral position the gas which is present in the stomach accumulates in the fundus of the stomach and can not escape through the perforation which is usually in the region of the pylorus.

2. Absence of gas in the stomach at the time of perforation.

3. Small size or quick closure of the perforation, because of which the quantity of air that escapes is too small to be visualized.

4. Trapping of the gas by adhesions.

Pneumoperitoneum may follow other conditions besides ruptured peptic ulcer. The authors have observed it after blunt trauma to the abdominal wall as well as after gunshot and stab wounds. Besides these traumatic cases they have observed it in nine cases of spontaneous rupture not due to peptic ulcer. In two of the latter it was due to the perforation of a carcinoma of the stomach, in three to perforated appendicitis, in two to the perforation of a tuberculous ulcer of the small intestines and in two to the rupture of a typhoid ulcer. In all but two of these cases it was possible to make a correct diagnosis because of the history and the clinical observations.

ALTON OCHSNER, M.D.

of the ulcer remains possible. Extrapentoneal displacement of the duodenal stump is another expedient. Drainage to the duodenal stump seems indicated in all cases. Simple gastrojejunostomy is inadvisable on account of the great danger of the formation of a peptic ulcer of the jejunum in the presence of duodenal stenosis. Fatal hemorrhage from the ulcer has been known to occur after this procedure.

SOVETAG (2)

Dineen P. Acute Perforated Ulcers of the Stomach and Duodenum. *Ann Surg* 1929 XC 1027

The author presents data on 142 cases in which operation was performed for acute perforated ulcer of the stomach or duodenum. One hundred and thirty eight of the patients were males. The youngest was eighteen years and the oldest sixty nine years of age.

Most of the patients were operated upon within an hour after their admission to the hospital. The anæsthetic of choice was ethylene ether. A high right rectus incision was made and in most cases simple closure of the ulcer was done with drainage to the peritoneum. In 10 cases a primary gastro-enterostomy was performed because the surgeon believed that the lumen of the pylorus was obstructed. In 2 cases a re-perforation occurred and gastro-enterostomy was done secondarily. In the cases of primary gastro-enterostomy there were no deaths. After the operation the diet was restricted according to the patient's condition.

The mortality was 21 per cent. In 91 cases in which operation was performed within six hours after the perforation there were 7 deaths a mortality of approximately 7½ per cent. In 32 cases operated upon between six and twenty two hours after the perforation there were 11 deaths a mortality of 31½ per cent. In 16 cases operated upon more than twenty four hours after the perforation there were 13 deaths a mortality of 81½ per cent. The cause of death was general peritonitis in 24 cases, pneumonia in 5 cases and pulmonary embolism and multiple abscesses of the liver in 1 case each. In the cases in which the perforation occurred immediately after the ingestion of food and those in which purging had been done the amount of gastric contents in the peritoneal cavity was more apt to be large and therefore fulminating peritonitis was more apt to occur. Since the use of ethylene anesthesia the incidence of postoperative pneumonia has decreased.

Of the 111 patients discharged after operation 103 were followed. A careful study of each was made, including laboratory and X-ray examinations. Special attention was paid to the nervous state. It was found that nervous patients were more prone to have recurrent attacks of gastric disturbance than others. When the nervousness was relieved the incidence of the attacks was decreased. The patients were given instructions as to diet and told to report for observation at the clinic at frequent intervals.

Eighty three patients remained well after the primary operation. Of these 77 had simple closure of the perforation without gastro-enterostomy, 5 simple closure with primary gastro-enterostomy and 1 simple closure with pyloroplasty. The remaining 20 patients had a recurrence of the symptoms of peptic ulcer. Of these 18 had simple closure without gastro-enterostomy and 2 simple closure with primary gastro-enterostomy.

In the discussion of this report McCREERY stated that his experience at Bellevue Hospital, New York closely paralleled that of Dineen. In many of his cases the perforation had been preceded by alcoholic excess. In 10 per cent the perforation was the first symptom of the lesion. On the First Division at Bellevue Hospital an immediate gastro-enterostomy is done in 30 per cent of cases of perforated duodenal ulcer but in only 10 per cent of cases of gastric ulcer.

LEWISOHN said that in his opinion patients who are obliged to restrict their diet for a long period after perforation of an ulcer are suffering from chronic ulcer. On re-examination of patients operated upon for acute perforated ulcer at the Mt Sinai Hospital, New York in the period from 1915 to 1925 it was found that a great many of them had symptoms of persistent ulcer. The discovery of retention pockets in the duodenum on X-ray examination and of tenderness on pressure proved that the ulcerative process was still going on. LEWISOHN suggested that the pyloric spasm attributed by Dineen to a nervous disturbance might be due to persistent ulcer.

FARR reported data on 203 cases of perforated gastric ulcer and 59 cases of perforated duodenal ulcer treated on the First Surgical or Cornell Division of the New York Hospital, the service of Gibson. One hundred and thirty three of the patients were males. The total operative mortality was 17.9 per cent. In 110 cases operated upon within twelve hours and 5 operated upon within eighteen hours of the perforation there were 14 deaths a mortality of 12.7 per cent. In 9 cases operated upon within from eighteen to twenty four hours after the perforation there were 2 deaths a mortality of 22.2 per cent. In 15 cases operated upon more than twenty four hours after the perforation there were 9 deaths a mortality of 60 per cent. The methods of treatment and the end results were similar to those reported by Dineen. However the surgeons at the New York Hospital are slightly more opposed to primary gastro-enterostomy. The reasons for their opposition are that it is exceedingly difficult to be sure that gastro-enterostomy is necessary, the operation has a definite mortality even when it is performed by expert surgeons and the results are no always good. It is believed at the New York Hospital that gastro-enterostomy is seldom indicated in acute perforations.

MORRIS stated that in cases of shock the surgeon should not take the time for even simple suture

one half hours) was approximately the same as that in normal dogs under similar conditions. In the ten dogs in which the usual longitudinal incision was made there were three poor results. In the normally functioning gastro enterostomies the average emptying time was practically the same as in the other series. In the three dogs with poor function there was marked evidence of gastric stasis. In two animals the obstruction became progressively more marked and was associated with vomiting and loss of weight. Fluoroscopic examinations approximately six weeks after the operation showed that the stomachs were greatly dilated. They did not empty perceptibly after six hours and after three days marked gastric retention persisted. The stomach was much enlarged and the opposite intestinal wall was stretched and ballooned out in line with the gastric wall.

The transverse jejunal incision is of advantage because the circular muscle fibers are not severed and accordingly interference to peristalsis is minimal. The distal intestinal loop gravitates downward without kinking into the optimal mechanical position and distention of the stomach instead of producing a valvular obstruction maintains the patency of the lumen.

In thirteen of a series of clinical cases in which gastro enterostomy was performed with a transverse jejunal incision there was no six hour gastric residue in the immediate postoperative roentgenograms; in eight there was slight retention and in two there was a marked gastric residue. In no instance did complications suggesting serious impairment of the motor mechanism develop during convalescence. In none of twenty-one patients subjected to X-ray examination at intervals between two and nine months after the operation was there any six hour residue.

Of thirteen patients followed up for a year or more after the operation ten were operated on more than two years ago and three between one and two years ago. The results were in general very satisfactory. One patient required a second operation for the relief of partial obstruction at the anastomosis attributable to pressure by the mesocolon on the distal loop. Another was incapacitated by rheumatism but had no further gastro intestinal symptoms. A third had symptoms of the menopause but none directly attributable to the gastro enterostomy. A fourth who had a gastric ulcer was not completely relieved and requires a gastric resection. A fifth died two years after the operation from recurrent carcinoma.

The author concludes that in properly selected cases the results of the operation described are excellent.

MARCEL E. LICHTENSTEIN, M.D.

Brandberg R. An Experimental and Clinical Study of the Chemical Blood Changes in Ileus. *Acta chirurg. Scand.* 1929, liv 415.

The author reviews the earlier theories as to the causes of death in ileus and then discusses the find-

ings of recent experimental studies of this problem. The latter show that in experimental strangulation of the intestine the cause of death is intoxication from gangrenous bowel tissue alone or in conjunction with peritonitis. In high simple obstruction (obturation) in which serious changes in the wall of the alimentary canal are absent, the chief lethal factor is believed to be the loss of mineral substance and fluid due to failure of the secretions discharged into the upper portion of the alimentary canal to be reabsorbed. This loss leads to chemical changes in the blood among which are a reduction of the chlorides due chiefly to the loss of gastric juice and a rise in the non protein nitrogen due to the loss of fluid. By a series of experiments on rabbits the author has been able to obtain further evidence in support of this theory.

Following obstruction of the upper gastro intestinal tract the animals died very soon and at necropsy no important changes beyond distention were to be found in the alimentary canal. On the other hand the blood changes mentioned appeared and it was evident that large amounts of chlorides alkalies and fluid had been lost.

Following obstruction of the large intestine the animals lived considerably longer and at necropsy the cause of death was found to be gangrene of the colon due to overdistention and peritonitis. In these animals there were no blood changes other than those of starvation and no considerable loss of mineral substance or fluid could be discovered.

Obstruction below the point of entrance of the pancreatic duct resulted in the greatest loss of chlorides and of fixed alkalies and fluid. This fact undoubtedly explains the old observation that simple obstruction at this point leads soonest to death.

In thirty six cases of different types of human ileus Brandberg investigated the non protein nitrogen of the blood and in most of them also the chlorides in the blood.

Three cases of ileus of the stomach or duodenum showed at the first examination on the third or fourth day of the disease a distinct rise in the non protein nitrogen and a reduction in the chlorides.

In obstruction of the lower small intestine (thirteen cases) a rise in the non protein nitrogen could usually be established after the condition had been present for two days.

In strangulated hernia containing small intestine (sixteen cases) a distinct rise in the non protein nitrogen usually did not appear until after the fourth day. In no cases of obstruction of the small intestine could a definite reduction of the blood chlorides be ascertained.

In obstruction of the large intestine (four cases) there were no blood changes even after a course of several days.

Particularly high non protein nitrogen values are to be found in cases in which obstruction of the stomach or small bowel has been present for several days. It is important to know this because otherwise the high non protein nitrogen value might

Sandstrom G. The Roentgenological Appearance in Cases of Benign Diverticular Growths of the Stomach. *Lettres de 1929* 7: 427

The author reports a case of interest from the point of view of differential diagnosis in which roentgen examination of the stomach showed a narrowing of the lumen of the pylorus with the character of a defect in the center of which there was a niche like opaque spot. As a result of the roentgen examination a tentative diagnosis of ulceration with surrounding infiltration was made.

Operation revealed a benign tumor like hyperplasia of the pyloric glands in the submucosa and muscularis surrounding a central diverticulum—a diverticular adenoma or more correctly on account of the character of the glands an adenomatosis combined with a diverticulum.

Such benign diverticular tumors (diverticular myomata or adenomata) are very rare. Only one case roentgenologically examined has been reported in the literature. In that case as in the cases reported by the author the roentgen findings were wrongly interpreted. On account of the associated presence of a diverticulum and a tumor a diagnosis based on the changes found in the roentgen picture—a niche like opaque spot surrounded by a defect in the contrast shadow—an appearance typical of an ulceration with surrounding infiltration (cancerous or cancerous)—becomes exceedingly difficult. Therefore when an ulcer or cancer is suspected on clinical grounds it is almost impossible in these cases to exclude ulceration. For a correct detailed diagnosis it is probably necessary to make repeated examination for a considerable time. The absence of spasm and the absence of blood in the feces are important findings which rule out ulcer.

Leriche R. and Lemann E. Two Cases of Lymphoblastic Sarcoma of the Stomach Still Cured Six Years and a Half and Three Years and Ten Months After Resection of the Stomach. (*Deux cas de sarcome lymphoblastique de l'estomac guéris 6 an et demi et 3 ans et 10 mois après résection gastrique*). *Lyon chir.* 1929 LXVI: 31

The first case reported was that of a man forty three years of age who began to have vague abdominal pain in the spring of 1921. The pain soon became localized to the left hypochondrium. In July 1921 the patient came to the surgical clinic with a hard nodular tumor beneath the false ribs on the left side. Operation performed under ether anesthesia revealed a large nodular tumor of the antrum extending quite high up on the lesser curvature. Resection was performed with a Földi anterior precoeliac gastrojejunostomy.

Histological examination showed the tumor to be a lymphosarcoma of the stomach. Recovery from the operation was complicated by bilateral bronchopneumonia.

For six years the patient was well but at the end of September 1928 he began to have a feeling of weight in the stomach associated with the eructation

of gas after meals and he again lost appetite and weight. On January 7 he was re-admitted to the hospital with a diagnosis of peptic ulcer.

At operation the anastomosed loop was found greatly dilated and the segment of the duodenum small. The anastomosis was not thickened and there was no induration. When the stomach was opened the mucous membrane above the anastomosis was a little red but there was no ulcer and no recurrence. The patient was discharged in good condition.

The second case was that of a man fifty three years of age who gave a history of pain in the epigastrium and loss of appetite and weight over a period of six weeks. A large tumor could be palpated beneath the umbilicus. Roentgen examination showed defective filling in the pyloric and prepyloric region.

Operation performed under local anesthesia on May 9 1925 disclosed a tumor of the middle part of the antrum with glands along the greater and lesser curvatures. Resection of the horizontal part of the stomach was done. Histological examination showed the tumor to be an ulcerated lymphoblastic sarcoma.

The operation was followed by uneventful recovery. When the patient was seen again in November 1928 he was in excellent health but roentgen examination showed signs of recurrence. Four months later three years and ten months after the operation he was still entirely well clinically.

ALFRED G. MORCA, M.D.

Morse T. S. Gastrojejunostomy with a Transverse Jejunal Incision. *J. Engh. J. J. Med.* 1929 CXI: 119

In the technique described by the author a point is elected between adjacent straight intestinal arteries and two small crushing clamps are applied side by side so that they extend across from two-thirds to three-fourths of the diameter of the intestine. A margin of $\frac{1}{2}$ in is left at the mesenteric border. After an incision is made between the clamps the handles of the clamps are separated and the direction of the original transverse incision is changed to run parallel with the long axis of the intestine. This portion of the jejunum is approximated to the stomach along the line of the proposed gastric incision so that the distal loop will lie near the greater curvature.

A comparative study of a series of ten experimental gastro-enterostomies performed with the usual longitudinal jejunal incision and ten performed with a transverse jejunal incision showed certain important differences. In the two series the operative technique and the site and site of the anastomotic openings were identical. In the ten dogs in which the anastomoses were done with the transverse jejunal incision the functional results were uniformly good. Roentgenographic studies showed that the stomach usually began to empty immediately after feeding. The emptying was never precipitous. The average emptying time (five and

may also be associated with apathy, vomiting, visible peristalsis and the presence of blood in the stools. The latter can be ruled out by the absence of a tumor and of free fluid. Of the cases reviewed by the author 40 per cent were admitted to the hospital with the diagnosis of intoxication. Other erroneous diagnoses were dysentery, cavernoma of the ileum, Barlow's disease, appendicitis and purpura. The author erred in a case of sigmoiditis.

Of the 50 children who were operated upon, 13 (26 per cent) died. None of the deaths occurred in the first twenty-four hours. Of the children operated upon in the first two days of the condition fewer than 4.4 per cent succumbed. Four of 6 infants and 6 of 7 older children who were operated upon on the third day were saved. All of the infants and 2 of 4 older children who were operated upon on the fourth day died. In the cases operated upon still later, the results again improved. Of 7 children only 2 died, a fact explained by the chronic or intermittent character of the invagination.

The 13 children who died could not have been saved by taxis. In 10 of the fatal cases (in 4 of which resection was attempted) gangrene of the intestine was present and in 3 the condition was three or four days old. The disinvagination was associated with tearing of the serosa, the general condition was very poor, a diffuse bronchopneumonia developed, and death occurred from seven to nine hours after operation. Of 6 patients subjected to resection 4 died. However, absolute pessimism regarding resection is not justifiable as the results depend upon the time that the operation is performed. Of the 38 patients in whom disinvagination was done and the intestine remained viable, only 3 (7.89 per cent) died.

The patient should be prepared for operation by enemas and infusions. Gastric lavage is contra-indicated as it is too severe. The patient should be placed on a warm pad and the anesthesia should not be begun until the last minute. The incision must not be too short. It should be median or pararectal. Nursing infants may be allowed to nurse again from four to six hours after the operation. Eclamptic seizures should be prevented by the rectal administration of chloral hydrate and fever by the administration of 0.05 gm. of pyramidon ten hours after the operation.

In none of the cases reviewed did debiscence or fatal atony occur. The author concludes that the best treatment of intestinal invagination is operation regardless of the age of the patient or the type or duration of the condition. SIEVERS (Z).

Badile P. L. The Effects of Closed Experimental Occlusion of the Jejunum and Duodenum After Biological Attenuation of the Contents (Sul comportamento del digiuno e del duodeno nella esclusione sperimentale chiusa previa attenuazione biologica del contenuto). *Arch. ital. di chir.* 1929 **xxx**: 645.

Badile reports experiments carried out on dogs. In one series a tract of jejunum from 10 to 15 cm.

long was resected near its point of fixation, the ends of the resected loop were closed, and an end to end anastomosis was effected between the ends of the remaining intestine. In another series a tract of duodenum was isolated and closed. In both series the loop of intestine was emptied before it was closed, washed out with physiological salt solution and treated with 2 or 3 c.c. of an emulsion of bulgarian bacilli.

The clinical and pathologico-anatomical picture in the animals in which the jejunum was excluded was the same as that in patients operated upon for ileus. After exclusion of the duodenum below the ampulla of Vater the animals were able to live as the cavity of the loop did not contain any bacteria that were potentially pathogenic, but the anatomical condition of the duodenum was greatly affected by autodigestion by the pancreatic excretion since following the technique used by the author on dogs Santorini's duct continues to discharge its secretion into the loop.

The instillation of bulgarian bacilli into the loop after it had been washed and before it was closed was effective in destroying pyogenic bacteria, but did not always kill the anaerobes. In the one experiment in which the anaerobes were killed only one form of saprophytic anaerobe was found at operation. Therefore the good effect in this case was due particularly to the absence of pathogenic bacteria in the loop at the time it was excluded.

In intestinal occlusion in man it has been found that the higher the occlusion the more serious the symptoms. The author's experiments seem to show that this fact is due to the process of autodigestion which is more active the more concentrated the enzymes producing it. ALDRY G. MORGAN, M.D.

Simeoni V. Intestinal Exclusion as a Preliminary Step in Radical Operations for Abdominal Disease (La deviazione del circolo intestinale come tempo preparatorio ad interventi più radicali in diversi processi morbosi dell'addome). *Ann. ital. di chir.* 1929 **viii**: 103.

As the mortality of primary resection of the intestines is high the author believes that the chances of success of radical operations can be greatly improved by first excluding the diseased part of the bowel to allow the organism to become adapted to the new conditions and to give the patient time to gain strength for the more radical procedure. In support of his opinion he cites a case in which this was done.

The patient was a woman thirty-six years of age who began to have pain in the right lower quadrant of the abdomen in January 1916 and entered the hospital in May 1927 with a diagnosis of chronic appendicitis of doubtful nature with probably a Jackson membrane. At operation the ileocecal loop and cæcum were found entirely enveloped in a membrane. The membrane was removed, the intestine freed and the appendix, which was small and atrophic, was removed.

cause confusion of the condition with kidney disease. This error is favored also by the fact that under certain circumstances ileus and uræmia may exhibit rather similar pictures.

As an aid in making the diagnosis of intestinal obstruction chemical blood changes cannot be regarded as of great value since in obstruction of the large intestine they are usually absent and in obstruction of the stomach and small intestine they are inconstant and never occur early. Moreover they are by no means pathognomonic of intestinal obstruction as they occur whenever large losses of chlorides and fluid result from any cause.

The chemical examination of the blood should have a greater clinical value as an aid in controlling the postoperative course in obstruction of the stomach and small intestine for if passage is started the existing blood changes disappear whereas if the obstruction persists the changes increase.

The investigations of the blood chemistry have given a firmer support to the subcutaneous administration of sodium chloride solution in intestinal obstruction. This is compensatory therapy. Undoubtedly larger quantities of the solution should be administered than is the rule.

Jenkins H P. Experimental Ileus I High Obstruction with the Biliary Pancreatic and Duodenal Secretions Shortcircuited Below the Obstructed Point. *Arch Surg* 1919 xiv 1072

In experiments on dogs the author produced high intestinal obstruction and shortcircuited the biliary, pancreatic and duodenal secretions to a point below the obstruction. These dogs survived considerably longer than others in which the secretions were left to drain proximal to the point of obstruction. In some instances the operation was followed by a loss of weight equal to one-half the original weight. It caused also a gradual fall in the blood chlorides and a gradual rise in the carbon dioxide combining power of the plasma. The non protein and urea nitrogen of the blood usually fell at first and then rose gradually until just before death when it rose abruptly. Few microscopic changes were found in the organs at autopsy. In most cases death was due to complications. No explanation is offered for the prolongation of life by the shortcircuiting of the secretions.

CLARENCE V. BATESMAN M.D.

Obadalek W. A Contribution on Invagination in Children. (Ein Beitrag zum Invaginationproblem im Kindesalter). *Beitr. klin. Chir.* 1929 cxlvi 668

The author reviews a material of 53 cases of invagination which came for treatment among 101 cases of ileus in children under fourteen years of age during the period from 1910 to 1928. The marked increase in the incidence of invagination, especially in infants since 1922 is probably to be explained by improvement in the diagnosis. Twenty eight of the children whose cases are reviewed were infants and most of the infants were between seven and nine months of age. Thirty two (61 per cent) of

the children were males. In 4 cases there was a double invagination of the ileocecal type.

In the author's material as in that of others the invagination was most frequently of the ileocecal type (69.8 per cent of the cases). All of the cases were of the central or descending type. On the basis of his experimental studies the author believes that both the circular and longitudinal muscle are involved in the causation of invagination. The ileocecal type of invagination usually has its origin in a spasm of the lower end of the ileum. Occasionally the condition is of the cecal type. The latter is characterized by freedom of the ileum and the tip of the appendix from involvement and the relatively long duration of the condition. In spite of severe colics there is no true advance in the invagination, evidently because the end of the small intestine acts as a plug.

Of 50 cases in which operation was performed the cause was found to be a congenital or inflammatory change in 15 (30 per cent)—a polyp in 4, a Meckel diverticulum in 3, chronic appendicitis in 2, empyema in 2, gangrenous appendicitis in 1 and chronic appendicitis with marked lymphoma formation in 2.

Invagination of the ileum occurred in 70 per cent. In 1 case of jejunal invagination a perforated ulcer was so tightly closed by the invagination that peritonitis was prevented. As traction on the appendix at laparotomy caused contractions in the lower part of the ileum in the direction of Baubin's valve it is very probable that chronic irritation in the region of the appendix may act as the exciting cause of invagination.

An important rôle in the causation of invagination is played by dietetic errors, especially in nurslings, which are very sensitive to changes. Such errors account for the frequency of invagination in July. Every condition favoring disturbances of nutrition may cause invagination and probably spasmophilia. Trauma is of secondary importance.

Invagination is manifested in nearly every case by pain. Vomiting is seldom absent (6 in 53 cases). In 4 extreme cases of perforation peritonitis the vomiting was of the faecal type. Blood was found in the stools in 62 per cent of the cases and in the enema water in 83 per cent. A mass was visible in fewer than 53 per cent of the cases but was discovered on palpation under anesthesia in all. Visible peristalsis was noted in 22 cases and was always apparent when the abdomen was still soft and yielding. In the presence of metronom it was more difficult to demonstrate. The author ascribes great importance to the demonstration of free fluid in the abdominal cavity which was possible in all of the cases reviewed as well as in other forms of mechanical ileus. He disapproves of roentgen diagnosis with the use of a contrast medium because of the associated loss of time and the possible injury that it may cause in infants.

In the diagnosis it is most important to differentiate intestinal invagination from intoxication which

tacula of the colon is between fifty five and fifty eight years. One of the outstanding contributing factors seems to be adiposity. Constipation may be the result rather than the cause.

Diverticula of the colon are generally multiple. They consist of hernial protrusions of the mucosa of the bowel through the muscularis into the fat of the mesentery or into the appendices epiploicae. The relation of the blood vessels running into the bowel has been emphasized as a source of weakness in the bowel wall. The fat tags along the lateral mesenteric border are most affected. The most frequent changes developing in these diverticula are the result of infection with subsequent inflammation. Faecaliths of the shape and size of marbles may develop in the diverticula. When infection develops in a diverticulum of the colon a chronic inflammatory process usually results with induration of the fat about the diverticulum, the formation of adhesions between the diverticulum and the surrounding structures and in some instances the formation of an abscess. When an abscess forms it usually ruptures into the structure to which it is attached. This may be another loop of bowel, the rectum, the abdominal wall or the bladder. If the diverticulum is surrounded by omentum or is adherent to the pelvic peritoneum a perirectal abscess or a retroperitoneal abscess develops. If the infection in the diverticulum is acute and there has been no inflammatory process the diverticulum occasionally ruptures into the free peritoneum with resulting generalized peritonitis. If as in most instances the infectious process is chronic and repeated attacks of inflammation occur with or without abscess formation a chronic inflammatory thickening occurs in the colon, usually the sigmoid which is hard and more or less fixed. The bowel in this region becomes narrowed by scar tissue and a stenosis occurs which may lead to obstruction of the bowel. The relation of carcinoma to the development of diverticulitis is not clear but it is known that carcinoma and diverticulitis are rather frequently associated.

The symptoms of diverticulitis depend on the inflammatory and infectious processes taking place in the diverticula and vary from chronic spastic colitis with constipation to perforative peritonitis with pelvic abscess, retroperitoneal abscess, bladder fistula, acute perforative peritonitis or chronic stenosis of the colon with an inflammatory tumor. The most frequent manifestations are recurrent attacks of pain in the lower abdomen and gas distention associated with constipation. The stools may contain blood (18 per cent of cases Judd) and occasionally show pus. An excess of mucus in the stools is common. If the inflamed diverticulum is near the bladder it causes frequency of urination and burning urination. If the inflammatory process attaches itself to the bladder pus is present in the urine. If the diverticulum ruptures into the bladder gas and faeces pass from the bladder on urination.

The diagnosis of diverticulosis is made not only on the basis of the history and physical examination but also by X ray examination of the colon. If the bowel wall is sclerosed by scar tissue or a great amount of inflammatory reaction is present about the bowel the diverticula may not fill and only a filling defect of the bowel will be seen in the roentgenogram. In most instances a characteristic filling of the diverticula is seen. Associated with the filling is a marked spasm of the colon which greatly exaggerates the haustra and gives the bowel the appearance of a partially closed accordion. If a fistula is present barium may be seen running outside the bowel or may be found in the bladder urine.

In complicated cases in which carcinoma of the sigmoid is suggested the differential diagnosis is by no means easy. In diverticulitis the symptoms are intermittent and the passage of bloody mucus and pus in the stools is much less prominent than in carcinoma. In patients developing a sigmoidovesical fistula there are a number of possibilities as to the cause but the condition most commonly responsible for such a fistula is diverticulitis. Carcinoma of the upper rectum and at the rectosigmoidal juncture very commonly attaches itself to the base of the bladder and late in the progress of the disease may form a sigmoidovesical fistula by rupturing into the bladder. The differentiation between carcinoma and diverticulitis under these circumstances may be most difficult if not impossible. Carcinoma of the bladder rarely perforates into the intestine. Tuberculous peritonitis with abscess formation frequently results in fistula formation after the abscess has ruptured through the abdominal wall or into abdominal viscera. Carcinoma of the ovary especially papillary carcinomatous cysts may involve both the bladder and the bowel resulting in a fistulous communication between the two. Chronic infection of the tubes with induration and long standing abscess not infrequently causes a sigmoidovesical fistula. Tuberculosis of the tubes may also be responsible for such a condition. Rarely, actinomycosis of the large bowel and echinococcus disease of the mesentery or pelvic organs may cause a fistulous communication between the bladder and bowel.

The treatment of diverticulitis depends on the secondary inflammatory changes taking place. If the symptoms are merely those of spastic colitis with attacks of pain and gas formation the patient should be given a diet rich in cellulose vegetables and cooked fruit to promote easy elimination without the use of cathartics or enemas. The rather continuous use of paraffin oil by mouth is helpful. Calcium salts which predispose to faecalith formation should be avoided as should bran, seedy fruit and vegetables. Small doses of belladonna may be helpful in controlling spasms of the bowel. If an inflammatory mass develops rest may result in its disappearance but a temporary colostomy above the mass may be required. Later resection of the involved bowel may be necessary but after the

A month after the operation the patient was discharged in perfect health but 2 year later she came back saying that after 2 month of good health she had begun to have pain again and a continuous remittent fever. An abscess had been opened in the right lower quadrant of the abdomen and there was still a fistula discharging pus. On the basis of the clinical and roentgen findings a diagnosis of tuberculoma of the cæcum with a fecal fistula was made. Ileosigmoidostomy was performed on May 2 1928. The wound healed by first intention. After this operation the pain persisted although roentgen examination showed that the anastomosis was functioning perfectly.

At a third operation performed on November 30 the anastomosis was found free from adhesions and functioning well. The tumor with the cæcum and ascending colon and the part of the small intestine between the anastomosis and the tumor were removed together with the right adnexa which were adherent to the mass. The stumps of the intestine were then closed and the abdominal wound was sutured around a Mikulicz drain.

After this operation the fistula gradually healed the abdominal pain stopped the stools became normal and the patient rapidly regained her health.

Histological examination of the specimen confirmed the diagnosis of tuberculoma of the cæcum. As the appendix was free from specific changes at the time of the first operation the tuberculosis was latent in the wall of the cæcum when that operation was performed or developed subsequently.

ANDREW G. MORGAN, M.D.

Gargiulo M. The Roentgen Picture of the Right Colon in Rapid Emptying of the Stomach (Il quadro radiologico del colon destro nello svuotamento rapido dello stomaco). *Rassegna interna di clin e terap.* 1929 x 843.

Twenty cases of rapid emptying of the stomach due to ulcer hyperacidity and other causes are reported with roentgenograms. They show that rapid emptying of the stomach produces slight lesions in the right colon which can be demonstrated roentgenologically and look in the roentgenogram like ulcerous colitis. In the author's opinion these lesions are due to the lack of the saponifying and reducing function of the bile. The ileum does not tolerate the acid of the unneutralized chyme well and as it is capable of rapid peristaltic movements it forces the chyme quickly into the colon where it causes the changes seen in the roentgenogram. The picture is very much like that of alimentary dyspepsia in children. The lesions are not serious enough to cause symptoms of any importance.

ANDREW G. MORGAN, M.D.

Friedenwald J. Feldman M. and Rosenthal L. J. Mucous Colitis. *Ann Int Med.* 1929 iii 521.

Three views as to the nature of mucous colitis have been advanced: (1) that it is purely neurogenic

and the mucus is entirely a nervous hypersecretion (2) that it is catarrhal the result of inflammation and (3) that it is partly neurogenic and partly inflammatory. The impression is gaining ground that in most instances inflammatory changes are present. There is no question that the condition manifests itself mainly in persons with instability of the nervous system. There is all the evidence indicating that nervous instability plays an important rôle in its causation and that there is a correlation between the physical type and the secretory and motor disturbance.

Contributory factors associated with the development of mucous colitis are chronic constipation, viscerotopias, cholecystitis, appendicitis, chronic disease of the female generative organs, endocrine disturbances, food allergy, abdominal adhesions, gastric and intestinal dyspepsia, and focal infection.

The usual symptoms are chronic constipation, colicky pain, and the passage of mucus in the form of membranes. In the diagnosis sigmoidoscopic and roentgen ray examinations are important. The roentgen string sign is especially valuable although it is not constantly present.

In the treatment foci of infection must be eradicated, attention must be given to the nervous system and the diet must be carefully regulated to correct constipation, undernutrition, and any digestive disturbance that may be present. Colonic irrigations are of doubtful benefit. Atropin and belladonna are of value to overcome spasm. Surgical procedures are unnecessary and should not be undertaken.

J. FRANK DUGOURT, M.D.

Rankin F. W. and Bergen J. A. Carcinoma of the Colon. Intraperitoneal Vaccination by Mixed Vaccine of Colon Bacilli and Streptococci. *Arch Surg.* 1929 xix 906.

In the treatment of malignant growths of the colon the authors have found intraperitoneal vaccination with colon bacilli and streptococci a valuable adjunct to other pre-operative measures. In a series of sixty cases in which such vaccination was done the mortality from peritonitis was definitely lower and the postoperative convalescence noticeably smoother than in a similar series of cases used as controls.

Important factors in the surgery of colonic malignancy are cooperative management, careful selection of patients for operation and of the type of operation for a particular case, and proper selection of the method of inducing anesthesia.

David V. C. Sigmoidovesical Fistula. *Ann Surg.* 1929 xc 1015.

The cause of sigmoidovesical fistula in any given case is difficult to determine. The most frequent origin is an abscess developing from a diverticulum of the sigmoid which ruptures into the bladder. Diverticula of the colon occur frequently without symptoms and as far as is known without being inflamed. The average age of patients with diver-

employed with a maximum dose for each of from 50,000 to 60,000 mc hrs of radium the radium being used at a distance of 15 cm from the skin and with the application of high voltage roentgen rays. The time required for external applications is usually from two to six weeks depending upon the size of the dose. Slight variation in dosage of the two agents is required in different cases. The skin tolerance determines the maximum amount of external irradiation at each portal. The skin must not be permanently damaged but slight blistering is of no consequence. Unfortunately because of the low degree of radiosensitivity of malignant tissue and the depth of the tumor mass from the skin surface and because of the susceptibility of the skin to irradiation a sufficient dosage of external irradiation cannot always be given to cause the complete disappearance of the cancer. Under these circumstances additional treatment is required.

A number of methods of applying radium have been attempted in the effort to supply adequate irradiation at the site of tumors in which external irradiation is insufficient for eradication. Interstitial irradiation by gold seeds may be employed alone but may be used also after preliminary external irradiation since the latter includes a large area of lymphatics within the field of treatment. After external applications the ulcerating area is decreased in size the tumor is smaller and the external limits are more easily defined. These alterations facilitate more accurate calculation of the dose and provide a more suitable field for the implants. An interval of from one to two weeks is allowed to elapse between external and interstitial applications.

Gold seeds are from 5 to 6 mm in length and 75/100 mm in diameter. They have a filter of 3/10 mm of gold and vary in strength from 1 to 3 mc. Seeds of 1 to 2 1/2 mc are the most serviceable for routine application.

The seeds are distributed throughout the mass and left *in situ*. The dose required depends upon the size and radiosensitivity of the tumor and should be of sufficient strength to eradicate the lesion in one application in favorable cases. Secondary applications are less effective and are usually followed by infection and necrosis. The amount of emanation required may vary between 10 mc (1300 mc hrs) and 65 mc (8500 mc hrs).

Intensive treatment by irradiation and radical surgery consists of four steps which are usually carried out in the following order: (1) external irradiation; (2) preliminary colostomy if indicated; (3) interstitial irradiation with the use of gold seeds in which large doses of emanation may be employed; and (4) resection of the rectum.

Resection of the rectum should be done from ten to fourteen days after the implantation of gold seeds. The painful reaction ordinarily occurring in the diseased tissue after the use of large amounts of radium is prevented by early resection. Special care must be exercised in placing the seeds in order that sterilization may be obtained in the infiltrated

areas. The difficulties of surgical removal of the rectum are not increased by the implantation of the seeds unless an interval longer than fourteen days is allowed to elapse between the procedures. The type of radical operation is governed by the clinical and pathological factors in the case. The diversity of opinion as to the most suitable surgical method of approach will be greatly reduced when the degree of malignancy of rectal cancer is given equal consideration with the extent of tissue involved and the patient's general condition.

In the treatment of every case of rectal cancer the question as to the advisability of performing a colostomy arises. As an artificial anus is always an inconvenience it should be dispensed with in all favorable cases except those in which it affords an additional advantage to treatment. If the disease can be eradicated by external irradiation there is no advantage in colostomy unless the bowel is completely obstructed. Colostomy is of advantage in about 50 per cent of cases which require the implantation of gold seeds. In cases requiring radical resection colostomy is often a life saving procedure. Moreover exploration of the abdomen at the time of the operation may aid materially in the determination of the prognosis.

The frequency with which rectal cancer is allowed to progress to an unfavorable stage before it is recognized increases the importance of palliative measures. Palliative treatment by restraining the growth of the cancer tends to lessen the symptoms, improve the general condition and prolong life. Palliation is best obtained by irradiation but colostomy is at times of advantage. Each case must be treated according to its particular requirements.

The author reviews 153 cases treated between June 1925 and June 1928. Of these 32 were considered favorable and 121 unfavorable. In the treatment of the favorable group, irradiation was supplemented with radical surgery in 19 instances. Twenty-three (72 per cent) of the patients in the favorable group are alive and clinically free from recognizable cancer; 4 are alive and in good general condition and 5 are dead. One patient died of intercurrent disease, 3 died following operation, and 1 died of acute yellow atrophy of the liver several months after treatment. Autopsy in the case with yellow atrophy of the liver failed to show any evidence of cancer. In the unfavorable group irradiation resulted in a lessening or disappearance of the symptoms and in many instances marked prolongation of life. Of the 39 patients who received intensive palliative therapy 11 are dead, 12 are in fairly good general condition, 4 are practically free from symptoms and 3 are free from recognizable cancer. The effect of irradiation in the cases of 14 patients receiving only moderate intensive treatment was manifested chiefly by a decrease in severity of the symptoms and marked temporary improvement in the general health. Ten of these patients are still alive and in fairly good condition.

MANUEL E. LICHTENSTEIN, M.D.

fecal stream has been sidetracked by colostomy these inflammatory tumors often subside. If stenosis of the bowel results a preliminary colostomy followed by resection of the diseased segment of the bowel may be necessary. Resection may be done by the Mikulicz graded method or by any other accepted method. In acute cases in which an abscess has formed the abscess must be drained. In acute perforative peritonitis immediate operation with an attempt to close the source of the infection must be carried out. In cases of fistula between the bladder and the large bowel due to diverticulitis the treatment must depend upon the severity of the symptoms. If the process is acute with marked cystitis, and is evidenced by ascending infection, a colostomy should be done and the bladder drained by an indwelling catheter until the acuity of the condition subsides. In cases in which there is an inflammatory mass between the bladder and the bowel and the symptoms are not acute expectancy may be tried with the hope that under the influence of rest the mass will subside. When the fistula is a chronic process and no acute symptoms are present a laparotomy should be done, the communication between the bladder and the bowel separated, and each viscus closed by suture. Temporary colostomy is also usually indicated. In the cases of old persons who have had a small sigmoidovesical fistula for years and whose urinary tract has gained tolerance to fecal contamination operation may be deferred.

Case reports illustrating the various forms of treatment are presented.

MANUEL E. LICHTENSTEIN, M.D.

Binkley, C. E. Radiation in the Treatment of Rectal Cancer. *Ann Surg* 1929 20: 1000.

Rectal cancer while a relatively common disease is seldom diagnosed early, the difficulty of successful treatment being therefore increased. The most effectual methods of treatment for early cases are irradiation and the combined use of radium and surgery. At the Memorial Hospital New York irradiation is the principal factor in the treatment. Surgery is employed in cases in which it offers an additional advantage.

The following factors should be carefully considered before treatment is outlined: (1) the ability of the patient to withstand appropriate treatment; (2) the location and accessibility of the cancer; (3) the size of the primary tumor and the degree of its infiltration and dissemination; (4) the grade of malignancy of the cancer; and (5) the degree of radiosensitivity of the cancer.

Experience has proved that because of the wide variations in these factors the treatment of a given case may vary from the most radical form of rectal surgery to an application of external irradiation of sufficient intensity to bring about the desired result. It therefore appears advisable to grade rectal cancers according to their rapidity of growth rate of infiltration and tendency toward dissemination. The following five more or less definite groups

are suggested: (1) slowly growing late infiltrative and very late disseminating tumors (this type has a marked tendency to cause early stenosis); (2) uniformly growing infiltrating and disseminating tumors; (3) rapidly growing early infiltrating and late disseminating tumors; (4) slowly growing early infiltrating and moderately early disseminating tumors; and (5) slowly growing late infiltrating and early disseminating tumors.

Operability is determined largely by the general condition, the location of the tumor, the degree of fixation of the primary mass, and whether metastatic lesions have been formed.

Previous to the institution of irradiation therapy, radical surgery was the only method of treatment by which it was possible to hope for eradication of rectal cancer. A review of the literature indicates that about 60 per cent of the cases are considered operable, that in those operated upon the immediate mortality is about 16 per cent, and that only from 25 to 30 per cent of patients surviving the operation are alive at the end of three years. Assuming that these figures represent the true status of surgical treatment, only from 12 to 15 per cent of patients with cancer of the rectum remain alive at the end of three years after 60 per cent have been subjected to a radical operative procedure.

The small percentage of satisfactory results following radical surgery, in the so-called operable group and the lack of palliation provided by surgery in the inoperable group encouraged the investigation of other methods of treatment. Although irradiation therapy has its limitations, it is capable of producing satisfactory results in selected cases and often is especially effective when combined with the most suitable forms of surgery. In many unfavorable cases it gives considerable palliation.

The chief factor upon which the efficiency of external irradiation depends is the radiosensitivity of the cancer cells. All rectal cancers are deep. The distance from the skin surface to the tumor varies according to location of the tumor and size of the pelvis. Cancers situated near the surface obviously receive a higher percentage of the skin dose than those situated at a greater distance. External irradiation not only affects the primary focus but includes within its field of activity the surrounding lymphatics. The use of a sufficient number of portals of entry above the pelvis allows a more or less uniform influence to be exerted upon the primary mass and the surrounding area. Consequently external irradiation when adequate is not only the ideal method of irradiation therapy but also the ideal method of treatment for rectal cancer.

The most efficient form of external irradiation is the use of the radium pack. When sufficient radium is not available for this form of applicator, high voltage roentgen rays may be substituted. However, the best results appear to follow the combined application of radium and high voltage roentgen rays with radium predominating. From three to seven portals of entry about the pelvis are usually

If operated on at all the gall bladder should be removed as its involvement is undoubtedly only a part of a disease condition throughout the biliary tract.

The functional activities of the liver are carried on by two distinct epithelial systems. One of these is made up of the hepatic cells which are particularly active in the function of storing glycogen and undoubtedly have much to do also with the formation of urea, the metabolism of bile salts and other functions. In all probability inflammation or obstruction in the bile ducts interferes a good deal with the activity of these cells. Even if disturbed for a long time they may recover and even regenerate in cases in which there is actual destruction of some of the tissues. Surgical procedure is indicated to remove inflammatory and necrotic tissue and to release all pressure in the bile ducts. The other type of hepatic cell is the endothelial cell which is called the stellate or Kupffer cell. This is a part of the general reticulo-endothelial system. Undoubtedly inflammation and obstruction of the biliary passages also interfere greatly with the activity of this cell. Relief of these conditions is indicated in biliary surgery to allow these cells to regain their function.

Haipert B. The Gall Bladder. Its Functions and Some of Their Disturbances in the Light of Recent Investigations. *Arch Surg* 1929 **xiv** 1037

The theory that the gall bladder is a reservoir the function of which is to supply concentrated bile whenever it is needed in the intestine does not explain such phenomena as the occurrence of biliary concretions and hydrops of the gall bladder, the occasional absence of clinical signs and symptoms in the presence of gall stones, and the not infrequent occurrence of typical signs and symptoms of cholelithiasis in the absence of concretions. The experimental findings of Rous and McMaster indicate that the factor leading to stagnation of bile in the viscus is a disturbance of the resorptive function of the gall bladder and not a mechanical obstacle which hinders free inflow and outflow.

In 1924 the author suggested that bile which once entered the gall bladder did not ordinarily leave it again by way of the cystic duct, but is resorbed by the gall bladder mucosa and passed into the general circulation. He maintained that by such resorption of bile the pressure within the biliary system is regulated when the sphincter of the common duct is closed. He suggests that the structure of the gall bladder, the curves of its neck, the narrow cystic duct, and the complicated folds of Heister are arrangements that compensate for pressure changes in the hepatic ducts. He concludes that pressure probably that exerted on the liver during inspiration forces bile into the gall bladder when the ampulla of Vater is closed. The chief function of the muscular coat of the gall bladder, he believes, is to prevent overdistention and adjust the size of the organ to its contents rather than to empty the

viscus. This theory is supported by the fact that in certain animals a complete contraction of the gall bladder is impossible because of the structure or topography of the organ. It is supported also by the data thus far obtained in studies of the spontaneous contractions of the isolated gall bladder of the dog. In experiments carried out by the author and Lewis, the isolated gall bladder of the dog in Locke's solution showed rhythmic contractions occurring at the rate of from one to three per minute. When pressure changes were effected to the viscus a change was registered, but the curve soon returned to its former shape.

Under stress the muscular coat of the gall bladder hypertrophies. The cystic duct dilates, the curves of the neck become exaggerated, a relative insufficiency of the heisterian folds becomes evident, and numerous outpouchings called the 'Rokitansky-Ashchoff sinuses' appear. The outpouchings penetrate the muscular coat and are due undoubtedly to extensive contractions following prolonged and repeated overdistentions of the viscus.

Methylene blue injected intravenously into rabbits appeared in the common duct in a few minutes. Its concentration then remained constant for an hour or two. By the end of six hours it had dropped from a fifth to a fifteenth of its highest concentration. The bile removed from the gall bladder six hours after the intravenous administration of the dye contained from two to twenty two times as much dye as the bile in the common duct. Apparently this bile entered the gall bladder by way of the cystic duct or was excreted into it from the blood stream. In animals in which the cystic duct was tied, scarcely any trace of methylene blue could be found in the gall bladder bile.

When animals were fed methylene blue through a stomach tube, little if any of the dye was found in the common duct after from twelve to thirty-six hours, whereas the gall bladder bile invariably contained the dye. In fact the dye was usually recoverable from the gall bladder bile even after seventy-two hours. In the author's opinion the tenacity with which the dye is retained in the gall bladder long after the liver has ceased to produce bile containing the dye is one of the strongest indications that the bile does not leave the gall bladder through the cystic duct under ordinary conditions.

If resorption is the principal function of the gall bladder, stagnation in the gall bladder may be due to abnormal composition of the bile or a disturbance of resorption by the gall bladder mucosa. Stagnation of the former type is a hepatogenous stasis and probably similar to cholestasis produced by a hypercholesterolemia. Cystogenous stasis is caused by infections and new growths which impair the function of the wall of the gall bladder.

The author concludes that gall stones are of three types: (1) pure stones of hepatogenous origin containing pure cholesterol, biliary pigments or calcium carbonate; (2) mixed stones probably due to the retention of stooe constituents in the bile as the

Gordon Watson C. Radium Treatment of Carcinoma of the Rectum *Acta radiol* 1929 x 345

The author considers the relation of radium treatment to operation for rectal carcinoma. He concludes that radium should be used chiefly for inoperable and borderline cases and in these only in conjunction with surgery. He gives an account of the indications for radium treatment, the technique, dosage, and methods of attack. Neumann's method of irradiation with needles after exposure of the growth from the perineum is described in detail with diagrams showing the distribution of the needles. Other methods are considered more briefly, namely, intra-abdominal irradiation, intrarectal irradiation, irradiation through the vagina, irradiation through the skin of the perineum, surface irradiation on Columbia wax, and irradiation with a bomb at a distance.

In a few cases the author has used irradiation as a preliminary to excision, but the method is still under trial. He has employed it also for the treatment of recurrences after operation. In a period of four and a half years he has used it in a total of sixty-five cases, and on the whole the results have been encouraging. He is convinced that great alleviation can be obtained from irradiation in advanced cases, but he does not at present prefer radium treatment when the growth can be removed by operation.

Hochenegg J. Observations on the Maintenance of Continence in Patients Operated upon for Carcinoma of the Rectum (*Beobachtungen zur Erhaltung der Kontinenz bei weichen Mastdarmkrebs Operierten*) *Orroskif* 1929 xiv 457

The author does not consider the sacro-abdominal method the procedure of choice in carcinoma of the rectum as in his cases the original sacral method has given very satisfactory results with a considerably lower mortality.

Of the author's 1,700 cases of rectal cancer, 1,000 were operated upon by the sacral route. The mortality was 12 per cent, and 35 per cent of the patients remained free from recurrence after three years.

In recent years inoperable cases have become more numerous. On the average the patients were sick for fourteen months before they came to the clinic.

The site of the recurrence is usually the perirectal connective tissue. Therefore extensive resection far from the neoplasm, not only above and below but also laterally, is necessary. Hochenegg, at attempts to preserve the sphincter regardless of the primary treatment of the stump, as later it may be possible to restore continence with the mobilized upper segment of bowel either by direct suture or by drawing it through. Fistulae may close spontaneously or may be closed by the flap plastic method of Rotter.

The primary drawing through procedure is seldom possible, but in 58 per cent of cases in which it is done the patient remains continent. Incontinence of a sacral opening in the rectum may be made a tolerable condition by the use of a pad

bandage. Rubber stoppers should not be introduced into the lumen of the intestine; a rubber sponge pressed against the sacral region by a metal spring is better. The patient with incontinence should press upon the abdomen during defecation to secure more complete evacuation of the bowel.

As regards secondary operations to obtain continence, the author states that prolapse of the intestine which can be brought about by pressure considerably facilitates the solution of the problem. The bowel segment is freed by a circular incision, the duplication is straightened out, and the intestine then drawn through the pre-erect sphincter. Sphincter formation operations (Rydyger and Vitzel methods with tunnelled portions of muscle) are also of great value. EDWARD MALKIN (Z)

Gobbi L. Primary Sarcoma of the Rectum (*Sarcoma primitivo del retto*) *Clin chir* 1929 i 1155

Most of the malignant tumors of the rectum are epitheliomata. Sarcoma of the rectum is very rare. The author believes that his case is the thirty-third to be reported.

Gobbi's patient was a man sixty-one years of age who was admitted to the hospital with a diagnosis of hemorrhoids. His illness had begun only about four months previously with tenesmus and a feeling of weight in the lower part of the rectum. These symptoms were soon followed by pain and hemorrhage which increased progressively. The feces became ribbon shaped. About twenty days before the patient's admission to the hospital he felt spontaneous pain in the right hypochondrium for the first time. Pressure caused this pain to become more intense.

On examination pain was elicited at the lower edge of the liver and about four finger breadths below the costal arch. The upper surface of the liver was hard and nodular. Digital examination of the rectum revealed a round tumor the size of an orange with a nodular surface which in places was ulcerated and a short pedicle implanted on the posterior wall of the rectum. A diagnosis of pedicled sarcoma of the rectum with metastases in the liver was made and the tumor removed by sectioning the pedicle. Death resulted a few days later.

Microscopic examination showed the tumor to be a round celled sarcoma. Such sarcomata generally originate from the connective tissue of the rectum, but as the tumor in this case contained smooth muscle fibers, Gobbi believes it originated from the inter-fascicular connective tissue of the muscle layer. ALFRED G. MORLEY, M.D.

LIVER GALL BLADDER PANCREAS AND SPLEEN

Judd E. S. The Physiology of the Liver and its Relation to Surgery of the Biliary Tract. *Ann Surg* 1929 xiv 1233

There is very little occasion for the operation of cholecystostomy except as a temporary procedure.

Skog, T. The Value of the Wohlgemuth Diastase Reaction in the Urine as an Aid in the Differential Diagnosis of Acute Abdominal Conditions. Especially Acute Conditions of the Pancreas (Leber den Wert der Wohlgemuthschen Diastase-reaktion im Harn als Differentialdiagnostisches Hilfsmittel bei akuten Bauchzuständen mit besonderer Berücksichtigung der akuten Pankreasaffektionen) *Acta chirurg Scand* 1929 lxx Supp xiv

The author reviews 350 cases of acute abdominal conditions in which 3 000 determinations of the diastase in the urine were made at the Lund surgical clinic during the period from 1925 to 1927. The results and conclusions are summarized briefly as follows:

- 1 From the point of view of differential diagnosis, only values above 256 in Wohlgemuth's series are of any practical importance in acute abdominal conditions.
- 2 An increase of the diastase in the urine beyond 256 in an obscure acute abdominal condition points first to some affection of the bile ducts or the pancreas.
- 3 Absence of pathological diastasia in an acute abdominal condition excludes acute processes in the pancreas provided the examination of the urine is undertaken within one or one and a half days after the onset of symptoms.
- 4 In an acute affection of the bile ducts with no pancreatic symptoms a pathological diastasia may be of some importance for the diagnosis of the presence or absence of stones in the common duct as the cases of common duct stone reviewed showed an increase in the diastase in the urine 5 times as often as the cases without stones in the common duct.
- 5 From the point of view of prognosis the degree of diastasia in pancreatic conditions is of no importance.
- 6 In acute bile duct affections a pathological diastasia is of some importance in the determination of the operative indications as it points to anatomical relations between the bile ducts and pancreas which predispose to the development of a serious pancreatic affection on the basis of the biliary tract condition.

Archibald E. Acute Oedema of the Pancreas
Ann Surg 19 9 xc 803

In experiments on a cat a tiny cannula was introduced into the pancreatic duct through the opened duodenum and a small amount of clean gall bladder bile aspirated from the cat's gall bladder allowed to run into the pancreatic duct. The head and body of the pancreas rapidly became congested and oedematous. Sections removed showed the marked oedema grossly and microscopically. When the abdomen was re-opened a few days later the pancreas was found to be practically normal showing only mild oedema both grossly and microscopically.

In another cat the cystic duct was cut between ligatures and bile was collected by means of a cannula inserted into the common duct through the

duodenum. A cannula was then inserted into the pancreatic duct and liver bile allowed to run into the duct without pressure. A glassy oedema of the body and head of the pancreas immediately resulted. Sections of the pancreas showed a condition much the same as that found in the first cat. When the abdomen was re-opened six days later the pancreas was practically normal grossly and microscopically.

Archibald believes that an analogous condition occurs in man that it is due to the entrance of bile into the pancreatic duct under abnormal conditions and that the oedema may subside rapidly. He assumes also that this condition is responsible for many of the attacks of more or less severe epigastric pain which remain unexplained. Such attacks have been ascribed to digestive disturbances, gastritis, neuroses, neuralgia of the stomach, intestinal dyspepsia and disease of the biliary tract, usually gall stones. As it subsides within from twenty-four to forty-eight hours it remains undiscovered. The patient may have many such attacks, and comes to peak tolerantly of his indigestion.

In support of his theory the author cites a case in which the urine showed lipase during one of the attacks. At operation the pancreas was found firmer and larger than normal, practically the entire organ being enlarged. Nothing else abnormal was discovered in the abdomen. As this was before the days of prolonged biliary drainage for pancreatitis nothing was done. The patient had several attacks following the operation. Archibald made a diagnosis of pancreatitis before the operation and maintains that the later attacks were due to a mild form of that condition.

Abnormally severe epigastric pain radiating to the left, persistent epigastric tenderness on finger pressure which is limited to the anatomical position of the pancreas, a head zone of hyperæsthesia in the left flank at the level of the eighth to the tenth dorsal segments, a transient hyperglycæmia and a positive test for diastase or lipase in the blood or urine point to the pancreas. If all of these signs disappear within a few days their disappearance corresponding to resorption of the pancreatic exudate, is a further link in the diagnostic chain.

In conclusion Archibald urges that under the circumstances described operation be performed. When the pancreas is found swollen the operation should consist of cholecystostomy with bile drainage maintained for a period of from one to two months according to the degree of the pancreatic swelling, to give sufficient time for thorough resolution of the pancreatic exudate.

CARL R. STEENE, M.D.

Brocq, P. Chronic Pancreatitis with Icterus (A propos des pancréatites avec ictère) *Bull et mém Soc nat de chir* 1939 lv 2096

The author reports two cases of jaundice due to chronic pancreatitis and one case of jaundice of doubtful origin.

The first case was that of a woman aged twenty-five years who complained of severe attacks of

result of a diseased condition of the wall of the gall bladder and (3) stones of both hepatogenous and cystogenous origin represented by mixed gall stones with a nucleus of one type and successive laminae of another

STANLEY H. MENTZER M.D.

Baumgartner C. J. Pathological Lesions of the Gall Bladder *Surg Gynec & Obst* 1929 xix, 50

The lesions in a series of 4575 gall bladders were classified according to a simplified grouping and the clinical manifestations in each group studied for comparison. There are no characteristic symptoms or clinical signs to differentiate the apparently earlier types of cholecystic disease but the later stages of the condition present certain typical findings.

The clinical features of chronic catarrhal cholecystitis and strawberry gall bladder or cholesterosis were identical. The occurrence of stones in a fairly high percentage of gall bladders showing minimal pathological change indicates that the gall bladder may assume a normal appearance between attacks.

Chronic fibrous cholecystitis showed a higher incidence of gall stone colic jaundice chills and fever than the groups of chronic catarrhal cholecystitis and strawberry gall bladder or cholesterosis. Stones were present in 89 per cent of the cases in this group.

Acute and subacute cholecystitis may occur without an appreciable increase in the temperature or leucocytosis. Gall stones occurred in 96 per cent of the cases.

The symptoms of empyema of the gall bladder vary greatly. The chronic form is usually not accompanied by grave manifestations the acute form not infrequently is fulminating. Stones occurred in 96 per cent of the cases.

Gangrene of the gall bladder is associated with marked clinical manifestations. There is marked tenderness and the temperature and leucocyte count are higher than in the acute forms. Stones occurred in 96 per cent.

Hydrops of the gall bladder was associated with stone lodged in the cystic duct in 96 per cent of the cases. A mass was palpable in 20 per cent. The patients were not nearly so ill as patients with acute empyema or gangrenous cholecystic disease.

Papillomata occur more frequently than the reported frequency. The single papilloma is fixable and easily overlooked. The relation between papilloma and malignancy is problematic.

Adenomata always occur in the fundus. Normally glandular tissue is not present in the tunica of the gall bladder its presence in some cases may partially explain the occurrence of adenocarcinoma in this situation.

The common types of malignant lesions of the gall bladder are carcinoma simplex adenocarcinoma squamous celled epithelioma papillary carcinoma and sarcoma. Stones are a constant factor. Clinically malignant conditions of the gall bladder may be classified in two groups. In the

first group the history is that of mild cholecystic disease in the second group that of colic of long duration with a short terminal phase of loss of appetite loss of weight and constant pain and in the third group that of colic of short duration with a coincident malignant phase of loss of weight anorexia and pain.

Filman R. Arneson A. and Graham E. A. The Value of Blood Amylase Estimations in the Diagnosis of Pancreatic Disease. A Clinical Study. *Arch Surg* 1929 xix, 943.

A large percentage of pancreatic lesions are unrecognized until laparotomy or autopsy is performed. Clinical attempts to recognize pancreatic disease have been disappointing. However determinations of the amylase content of the blood serum seem to be of some promise as a diagnostic aid. Laboratory data suggest that probably a large portion of the blood amylase is of pancreatic origin. In dogs ligation of the pancreatic ducts led to a prompt increase in the blood amylase to as much as seventy five times greater than the normal amount in a period of twenty four hours. After two weeks the concentration gradually fell to normal. At necropsy the pancreas was found hard and showed atrophy of the acini.

As experimental findings of workers using the Wohlgemuth or the Moockel and Rost methods of amylase detection have been more or less variable the authors devised a new method which they have found to be simpler and to yield more consistent result. It is based on the diminution of the viscosity of a starch solution. By means of this procedure it is possible to follow quantitatively and continuously the course of the diastatic reaction that is the breaking down of the starch to dextrose as each step of the reaction involves the hydrolysis of larger to smaller molecules and hence a reduction of viscosity. Every step of the diastatic reaction is measurable at the same time. Time is used as a measure of enzyme concentration. The measure of time is made with a stop watch the difficulty of selecting a color change as in the Wohlgemuth method being thus obviated. The authors describe the method in detail.

Standards were obtained from twenty five patients with a normal pancreas. In twenty-one of twenty two cases with abnormal values disease of the pancreas was found either at operation or at autopsy. In ten cases the pathological condition was chronic pancreatitis in seven pancreatic malignancy in two acute pancreatitis in two pancreatic cysts and in one case each injury of and pressure upon the pancreas. In repeated determinations on the same specimen the method was found accurate to within 10 per cent. In a number of patients the amylase determination gave the only indication of the pancreatic condition.

Jaundice had no effect on the amylolytic activity of the blood. Because of this fact the authors were able to exclude the pancreas in a number of cases of painless jaundice when the clinical signs pointed to pancreatic carcinoma. STANLEY H. MENTZER M.D.

Pancreatic asthenia requires supportive treatment, the restoration of body fluids and the use of glucose and insulin.

Cases of different types of pancreatitis are reported

HARRY W. FINK, M.D.

Miani A. Acute Necrosis of the Pancreas (Contributo anatomoclinico alla conoscenza della necrosi acuta del pancreas). *Ann. Ital. di chir.* 1929, 111: 1263.

Miani reports two cases of acute necrosis of the pancreas which presented some rather unusual features. One of the patients was a woman of sixty five years and the other a man of sixty four years. In neither case was there a history of previous intoxication or disease and in neither did operation or autopsy disclose any of the more frequent local or general causes of pancreatic necrosis such as lithiasis, anomalies of the gland ducts, and ulcer of the duodenum. One of the patients presented vagotonia and hyperglycemia without glycosuria. Because of the course of the symptoms and the presence of a swelling in the epigastrium and the left upper quadrant of the abdomen both patients were admitted to the hospital with a diagnosis of intestinal occlusion. One of them was operated upon forty eight hours and the other twenty four hours after the beginning of the disease. The swelling was found to be caused by the thickened retracted omentum which was opaque and finely granular to the touch.

The hemorrhagic and necrotic changes found in the great omentum in cases of pancreatic necrosis are caused by activated pancreatic ferments carried to the omentum by the blood or lymph. These changes occur quite early in the author's second case they began within twelve hours of the beginning of the illness. If the abdomen is opened on the basis of an uncertain diagnosis such findings at once indicate examination of the pancreas.

The course of acute necrosis of the pancreas is rapid and death usually occurs from eighteen to twenty four hours after the beginning of the symptoms. The only hope of recovery lies in early operation.

ALDREY G. MORGAN, M.D.

Nordmann O. Acute Pancreatic Necrosis and Cholecystitis (Akute Pankreasnekrose und Cholecystitis). *Chirurg* 1919, 1: 721.

Whereas formerly the co-existence of disease of the gall bladder and disease of the pancreas was regarded as accidental (koerte Kehr) in recent years attention is being called more and more frequently (Schmieden Coenen) to the close relationship between acute pancreatitis and cholecystitis. In 1913 the author stated that in every operation for acute pancreatitis the biliary tract should be examined and the gall bladder removed or the common duct drained. In this article he reports the results of this procedure in twenty seven cases of acute pancreatitis which he has operated upon since the war. In nearly all of these cases there was a definite history of biliary tract dis-

ease. Besides the clinical symptoms the diastase values in the blood and urine confirmed the diagnosis.

The cholecystectomy or drainage of the common duct performed as the result of examination of the biliary tract produced no improvement in the mortality of the operation. In the author's opinion restoration of the diseased pancreas cannot be influenced by any therapeutic measure. The mortality is about 50 per cent. In two cases in which an immediate operation was contra-indicated by the patient's very poor general condition both patients recovered after an abscess developing later in the omental bursa had been opened by a simple operation. Accordingly the author refrained from operating also in seven other cases of severe pancreatitis limiting the treatment to the administration of small doses of insulin infusions and cardiac stimulants. Only two of the patients died. The five others were discharged cured without operation.

On the basis of his experience the author has come to the conclusion that the association of pancreatitis and cholecystitis is of importance chiefly as regards the prevention or diagnosis of pancreatitis and that in biliary tract diseases with a tendency toward the development of pancreatitis operation should be performed earlier. However this knowledge has led to no improvement in the operative measures. The author therefore recommends that after the development of pancreatitis an individualizing therapy be used and that, in suitable cases, this be restricted to entirely conservative measures.

HOWE (Z)

MISCELLANEOUS

Morley J. Afferent Impulses from the Skin in the Mechanism of Abdominal Pain. *Lancet* 1929, Oct. 11: 1249.

Weiss and Davis have recently reported that patients with localized abdominal or thoracic pain are relieved of the pain partially or completely by novocain infiltration of the skin over the painful area. They claim that this is experimental proof of Mackenzie's viscerosensory reflex theory of referred pain.

Morley reports a study of the effects of novocain infiltration of the skin over localized areas of pain in abdominal lesions with reference to (1) the spontaneous pain (2) the pain felt on coughing (3) the objective cutaneous hyperalgesia as tested by light pinching of the skin and (4) the deep tenderness and associated muscular rigidity.

Spontaneous pain was abolished in six of eight cases and relieved in the two others. Pain felt on coughing was definitely affected although not to such an extent as spontaneous pain. Hyperalgesia was abolished. The effect on deep tenderness was slight and the effect on muscular rigidity hardly appreciable.

The results confirm the findings of Weiss and Davis but Morley interprets them differently. Weiss and Davis holding to Mackenzie's viscerosensory

abdominal pain which had recurred over a period of six months. The first attack occurred during the night and was followed by jaundice which persisted for several days. Every two months subsequently there were similar attacks accompanied by jaundice and fever.

When the patient entered the hospital the liver was slightly enlarged and palpation revealed three painful points: one over the gall bladder, one high in the epigastrium, and one just to the right of the umbilicus. She had lost about 6 kgm. She was ordered to take a lacto-vegetarian diet and oleic acid. During the next three months she nearly recovered her normal weight and the painful attacks ceased completely, but a slight discoloration of the skin and conjunctiva persisted. At the end of the three months an attack of obstructive jaundice occurred. Ordinary roentgenograms and roentgenograms taken after the ingestion of tetra iodide remained negative. The clinical diagnosis was cholelithiasis, perhaps with engagement of a stone in the cystic duct and attacks of angiocholecystitis.

Operation revealed a rather voluminous gall bladder with a thickened wall which was filled with stones and a severe pericholecystitis with adhesion of the gall bladder to the contiguous organs. The head of the pancreas was enormous, hard and bosselated. Brocq removed the gall bladder and drained the common duct.

After the operation the patient had no further attacks of pain or jaundice, but found that it was necessary to regulate her diet because after a dietary indiscretion she became conscious of a sensitive spot in the right side.

The second case was that of a woman twenty-eight years of age who gave a history of chronic jaundice and attacks of pain and fever. The diagnosis was the same as in the first case. Careful exploration during operation failed to reveal a gall bladder. The head of the pancreas was enormous, bosselated and apparently full of small fibromata. The common duct was free from stones and was not distended. The hepatic duct was drained. The bile flow was very slight during the first forty-eight hours but became abundant after a few days. The jaundice disappeared. The drain was left in place for a month. This case was treated too recently to permit a prognosis.

The author is convinced that in neither of these cases was the condition a pancreatic cancer. He believes that it was a chronic pancreatitis because both of the patients were young and especially because the general condition returned to normal and the jaundice disappeared.

In discussing the second case he states that absence of the gall bladder in man is rare. Hirschle reported eleven cases in which a common duct was found. Chervy and Pavel estimate the number of cases of complete absence of the gall bladder on record as thirty. In most of them the common duct was enlarged. In the author's case the common duct was of normal size. In another case Brocq found a

gall bladder the size of a hazelnut with a very large common duct.

In the third case of chronic jaundice reported in this article that of a woman forty-three years of age there was slight induration of the head of the pancreas. Cholecystostomy was followed by immediate disappearance of the jaundice. Three roentgenograms taken after the injection of lipiodol showed that the bile ducts were permeable but the common duct appeared constricted in the upper median portion. Brocq concluded that the condition responsible for the jaundice was either a chronic pancreatitis or a partial choledochitis. *Percy*

Brayer J. H. Pancreatitis. Its Treatment As Related to Gall Bladder Infection. *California & West Med.* 1919, xxxi, 381.

A close relationship between pancreatitis and biliary disease is recognized. The pancreatic lymphatics drain toward the head of the pancreas and the common bile duct and anastomose with the lymphatics coming from the gall bladder. There is a close relationship between the lymphatics of the gall bladder, the liver and the pancreas.

Acute pancreatitis is hemorrhagic, gangrenous or suppurative. It is usually a necrotic process. The hemorrhagic form is often associated with fat necrosis and gall stones. Chronic pancreatitis is characterized chiefly by an increase in the fibrous tissue of the pancreas. In its late stages the gland feels hard and nodular. Obstruction of the common bile duct may result from the fibrosis and tumescence of the head of the pancreas.

The cause of these pathological changes is still disputed. There are records of cases in which the infection was traced to the appendix and to a duodenal ulcer. Evidence as to whether the infection or other causal agent reaches the pancreas through the lymphatics or by way of bile retrojected into the ducts of the pancreas is far from conclusive.

The mortality of operation for acute pancreatitis has been decreased by early diagnosis and prompt surgical treatment. The disease is most often mistaken for high intestinal obstruction or perforation of a gastric ulcer or the gall bladder. All of these conditions require prompt surgical intervention. When the abdomen is opened the escape of bloody fluid and the presence of areas of pancreatic fat necrosis make the diagnosis positive. The bloody exudate should be aspirated; it is highly toxic. Tension in the capsule of the pancreas should be relieved by drainage established with Penrose drains. A careful examination of the gall bladder should be made. If the gall bladder shows evidence of infection it should be drained.

Chronic pancreatitis is usually not recognized until an operation is performed on the biliary tract. The first step in the treatment should be removal of the focus of infection. Cholecystectomy rather than drainage of the gall bladder is recommended. Drainage of the common duct may be done with a T tube or with catheters.

One patient with hydronephrosis was relieved by palliative means in the cases of two patients one suffering from renal tuberculosis and the other from pyelonephrosis it was necessary to remove the kidney. Three patients had had not only the appendix removed but the gall bladder also. Five women who had been subjected to salpingectomy and oophorectomy without benefit were relieved by palliative treatment. Two of them had nephropathy and were relieved by a kidney belt properly padded.

The lesson to be learned from this study is that in all cases of indefinite pain in the right loin a cystoscopic and pyelographic examination should be made.

MORRIS H. KAHN, M.D.

Muller G. P. Perversions of the Function of the Diaphragm. *Minnesota Med* 1929 xii 742

Muller reviews the comparative anatomy the surgical anatomy and the functions of the diaphragm with particular emphasis upon the nerve supply. Most of the findings of experimental investigation support the view that almost the entire motor innervation of the diaphragm comes through the phrenic nerve.

Observations after unilateral phrenic eversion show that man can live with hemiparalysis of the diaphragm. Even after the phrenic nerves on both sides have been frozen the diaphragm will move to a certain extent because of motor impulses transmitted by way of the accessory derivation. Neuhöfer has reported a case in which the diaphragm was practically immovable for three years after bilateral phrenicotomy.

The movements of the diaphragm may be determined by observing Litten's phenomenon by palpating the costal margins and by X-ray examination.

The sensory nerve supply of the diaphragm was determined by Capps and Coleman by direct pressure with a beaded wire. Pain may radiate downward to the abdomen or upward to the neck.

Immobility of the diaphragm may follow lateral pleurectomy on the phrenic nerve such as is caused by pleural exudates and mediastinal tumors.

Hiccough is a clonic spasm of the diaphragm. It may occur in exhausting illnesses after operations and as the result of reflex causes. In five cases Muller froze both phrenic nerves for its relief.

Phrenic nerve interruption is employed to cause therapeutic collapse. Unless the paralyzed diaphragmatic leaf is fixed paradoxical movements will be observed.

Eventration of the diaphragm nearly always occurs on the left side. It is not an uncommon condition. Muller favors repair of diaphragmatic hernia through an abdominal incision after preliminary freezing of the phrenic nerve.

Hypoventilation of the lungs frequently results after operations on the upper part of the abdomen because of limitation of movement of the diaphragm by splinting of the muscles, tight dressings or abdominal distention. Muller believes that the

disease for which the operation was performed may be responsible for loss of power in the diaphragm. In nineteen of twenty five cases studied distinct hypoventilation occurred. After operation, the tidal fluctuations were diminished about one half, and the X-ray showed definite diminution in the chest volume. The entire respiratory act was depressed and obstruction was favored by the resulting decrease in the size of the bronchial lumina. The respiratory depression is due partly to irritation of the vagus by the operative manipulations.

EARL GARNIDE, M.D.

Truesdale P. E. Hernia of the Diaphragm in Children. *J Am V Ass* 1929 xciii 1538

The author reviews the symptoms, diagnosis, and treatment of diaphragmatic hernia in children and draws the following conclusions:

1. A normal diaphragm is essential for perfect physical endurance.

2. The vast majority of defects discovered during life are of congenital origin.

3. Congenital hernia involving the stomach alone and revealed in infancy or early childhood demands surgery only when disturbing symptoms persist.

4. Congenital or acquired hernia of the diaphragm involving the transverse colon should be dealt with by a two stage operation (preliminary caecostomy) regardless of the age of the patient.

5. While children withstand operation surprisingly well the risk of shock will be reduced by the use of a mechanical respirator with intratracheal anesthesia.

JOHN J. MALONEY, M.D.

Elward J. F. and Otell L. S. Non Traumatic Diaphragmatic Hernia. *Am J Roentgenol* 1929 xxi 535

The authors report six non traumatic diaphragmatic herniae seen by themselves and one seen by Merritt. Three of the former were proved at operation, two were not operated upon and one could not be demonstrated at autopsy.

The ages of patients with non traumatic diaphragmatic hernia have ranged from five to seventy six years. The condition is more common in women than in men. In many cases it may be accounted for by congenital abnormal development of the omental bursa or interference with the normal closure of the pleuroperitoneal membranes in fetal life. Another factor is increased intra abdominal pressure such as results from coughing, straining at stool and straining during labor. In one of the authors' cases there was a history of whooping cough six months prior to the patient's entrance to the hospital.

The symptoms may suggest gall bladder disease or duodenal ulcer. Regurgitation and distress after eating are often relieved by the recumbent position. Pain may be present with flatulence and belching.

The diagnosis can be made by careful roentgenographic examination of the lower part of the esophagus. The patient should be examined in

reflex theory believe that the impulses pass along the splanchnic nerves to the cord segments where they set up an 'irritable focus' and that normal afferent impulses from the peripheral structure pass through the irritable focus giving rise to painful sensations referred to the peripheral structures. Morley states that these experiments do not prove the truth of the viscerosensory reflex theory of referred pain any more than they prove the truth of his theory of pentoneocutaneous radiation but they demonstrate that either the one theory or the other is the correct explanation.

In a previous article Morley presented evidence that the localized pain in the right iliac fossa in acute appendicitis is the result of stimulation of the exquisitely sensitive parietal peritoneum and that the afferent splanchnic nerves from the appendix are not concerned. The initial epigastric pain is a purely visceral pain.

The occurrence of shoulder tip pain when the undersurface of the diaphragm is stimulated by an irritating fluid as following the perforation of an ulcer or when under spinal anesthesia a swab is applied to the undersurface of the diaphragm offered a chance to prove the pentoneocutaneous theory of radiation. The possibility that the splanchnic nerve may act as the conducting mechanism is ruled out since it is generally admitted that the sensory fibers of the phrenic nerve are the afferent mechanism. In one case of ruptured duodenal ulcer it was found that infiltration of the shoulder tip area abolished the spontaneous pain in that area and in another it gave marked relief. In both cases the localization of the fluid was in the right subphrenic space and the right shoulder tip area was infiltrated. When under spinal anesthesia a swab was applied to the domes of the diaphragm during the process of cleaning the peritoneum the resulting pain was acute in the left (uninjected) shoulder tip area in both cases when the left dome was touched but only mild pain was felt in the infiltrated shoulder tip when the right dome was touched.

These findings indicate that the pain is produced by a process of pentoneocutaneous radiation since radiation of pain to the shoulder tip by the splanchnic nerves is not possible. Anesthesia of the skin over the shoulder cut off the normal afferent stimuli thereby profoundly modifying the sensation of pain although the direct afferent path through the phrenic nerve to the brain remains open.

L. S. PLATT, M.D.

Lowsley O. S. and Twinem F. P. The Differential Diagnosis of Pain in the Right Side of the Abdomen, with Particular Reference to Urological Lesions. *J. Am. M. Ass.* 1929, XLII, 1614.

Pain in the right upper quadrant of the abdomen may be due to various lesions of the liver, the pyloric end of the stomach, the gall bladder, duodenum, right kidney, colon, or appendix, or even the pancreas. Among the causes of acute pain in the right lower quadrant are acute appendicitis, salpingitis,

distention of the cecum with gas, calculus in the right ureter, twisting of the pedicle of a cyst of the right ovary, acute ureteritis, lead colic, pelvic abscess, retained right testis, penositis of the ilium, and local injury. The more common causes of sub-acute or chronic pain in the right lower quadrant include most of the pathological conditions just enumerated and in addition movable right kidney, tuberculosis of the right kidney and ureter, carcinoma of the cecum, ulcerative colitis, aneurism of the right iliac artery, iliocecal kink (Lane), periaepidicular adhesions, pericecal adhesions, psoas abscess, sacro iliac joint disease, tuberculosis of the hip, inflamed or tuberculous iliac lymphatic glands, intestinal obstruction from any cause, obturator hernia, herpes zoster, angioneurotic edema, infective arthritis and osteo-arthritis of the lumbar vertebrae, dysentery, typhoid, and sarcoma of the tibia and chondroma of the iliac bone. It should be borne in mind also that not infrequently lobar pneumonia, pleurisy, and other chest conditions may be the source of pain referred to the abdomen.

On account of the great variety of possible causes of right-sided abdominal pain it is not surprising that errors in diagnosis in cases presenting this symptom are by no means rare.

The four most common causes of pain in the right upper portion of the abdomen are (1) the appendix in high position, (2) infection of the biliary tract, (3) acute and subacute perforated gastric or duodenal ulcer, and (4) subdiaphragmatic abscess. It is necessary to take an accurate history in these cases. The mental make up of the patient should be considered in interpreting the significance of the pain of which he complains.

In from 15 to 20 per cent of cases of lesions of the kidneys and ureters previous operations had been performed without relief. Special attention should be given to (1) structure of the ureter (especially in women), (2) kinked ureter (which may be due to renal ptosis), (3) redundant ureter or herniation of the ureteral sheath, (4) aberrant renal vessels so placed as to interfere with drainage (not rarely the cause of hydronephrosis), (5) malpositions of the kidney, and (6) horseshoe kidney.

Thirty-one of the authors' patients had had the appendix removed without relief of symptoms. Ten of these patients were found to be suffering from right nephroptosis with kinking of the ureter. Of the latter eight were relieved by wearing a belt provided with a pad to elevate the right kidney. In the cases of two who were not relieved after trying the belt for over a year, nephropexy was performed with satisfactory results. Eleven had a calculus. In the cases of five the calculus was in the kidney, and necessitated operative intervention. In two cases nephrectomy was done. The remaining six patients had ureteral calculi which were removed by dilatation without operation.

Seven patients suffered from stricture of the ureter. The pain for which the appendix had been removed was relieved by mere dilatation of the ureter.

GYNECOLOGY

UTERUS

Welsh D A. Cancer of the Uterus. Some Facts in its Life History and Their Clinical Significance. *J. College Surg. Australasia*, 1920 11: 234

The uterus is among the common sites of the cancers causing the greatest loss of useful human life. The types of cancer that take origin from the uterus are remarkably limited to two main forms: (1) the well known adenocarcinoma of the endometrium and (2) the more common squamous carcinoma of the cervix.

The biology of a uterine cancer is clearly reflected in its morphology. As each of the great cancers of the uterus has a remarkably definite and constant structure it may be identified with certainty by the examination of a small fragment and as each has a constant and definite life history its clinical course may be predicted with considerable certainty when its structural type is known.

The initiation and continuation of a cancer are rendered possible only by a profound biological disturbance in a group or groups of epithelial cells whereby these cells acquire 'an irreversible pathological momentum toward something more than mere cell reproduction which is not necessarily cancer. Cancer cells acquire an uncontrolled independence of growth together with (1) a variable but often strong capacity for invading other tissues and (2) a variable but often strong power of imparting a cancer stimulus to adjacent non-cancerous cells, causing the latter also to become cancerous *in situ*.'

It is generally agreed that the immediate problem of cancer therapy is how to control the growth of the lesion and restrain its invasive penetration. Its infective spread is not so generally recognized. A study of the life history of cancer has more than an academic interest. We can do little to prevent the development of cancer but we can do much to prevent death from cancer.

All true cancers arise from epithelial cells that is tissues which have already taken their share in the work of the body. As yet no single and specific cause of cancer is known. It is becoming increasingly evident that there is at least one common factor predisposing to all cancers and that possibly there are two: the one heredity, and the other senescence. The importance of heredity has been established by investigations of the occurrence of cancer in strains of mice and studies of cancer families. It is probable that cancer does not start unless the host has inherited a predisposition toward it. A patient with a strong family history of cancer and suspicious clinical signs must be regarded in a different light than a patient with the same clinical signs but no such history.

Cancers of the uterus afford one of the most convincing examples of the predisposing influence of senescence as the age incidence of cancer attains its maximum in the fifth decade that is, toward the end of the child bearing period. In other words cancer of the uterus is most liable to develop at a time when the tissues of the uterus have come to the end of their functional usefulness. It is not so much the age of the patient as the senescence of the tissue concerned that determines the onset of uterine carcinoma.

Chronic irritation and damage appear to be additional causes of the origin of many cancers.

An analysis of the life history of an established cancer reveals three fundamental characteristics common to all cancerous growths though they are not all developed to the same degree in the different cancers: (1) growth by the division of cancer cells to form other cancer cells; (2) invasion of adjacent tissues by the cancer cells thus formed going on to the permeation of lymphatics, penetration of blood and lymph vessels and various forms of metastasis; and (3) lateral extension of the cancer area by the passage of a cancer cell stimulus from cancerous to non-cancerous epithelial cells so that the latter become cancerous *in situ*. The most potent stimulus to cancer growth is cancer growth. The cause of the further development of a cancer is not merely the continued operation of the same causes that started it to grow. There is a passage of a cancer influence or cancer stimulus from the cancerous to the non-cancerous epithelial cell. Such a stimulus may be an ultramicroscopic microbe—a true cancer parasite—but the evidence in support of this possibility is not altogether convincing. It is more probable that the stimulus is of the nature of a ferment capable of endowing the recipient cell with all of the unique properties of a cancer cell—the power of independent growth, the power of invasion and the power of imparting to other cells the cancer stimulus which it received from the other cells.

The diagnosis of uterine cancer should be made early and exactly because of the ease with which the lesion can be exposed. It can be done only by clinical examination, biopsy, and histological examination.

HARRY W. FINK, M.D.

ADNEXAL AND PERIUTERINE CONDITIONS

Geller F. G. The Permanent Results of the Operative Treatment of Adnexal Inflammations (Ueber die Dauererfolge der operativen Behandlung von Adnexitis-entzündungen). *Monatsschrift f. Geburtsh. u. Gynaek.* 1919 LXXII: 296

The author studied the question of the permanent results of the operative treatment of adnexal

the right and left oblique and the Trendelenburg positions. Pressure should be made on the abdomen during deep respiration. The condition must be differentiated from other defects of the œsophagus and stomach.

Many surgeons prefer the thoracic approach to diaphragmatic hernia. Of fifty three cases reported in 1912 this approach was used in eleven. Seven of the patients recovered and four died. Of the forty two patients operated upon by the abdominal route, seven recovered and thirty five died. Many of the last group had intestinal obstruction at the time of the operation. The abdominal approach was used in one of the authors' cases.

WILLIAM J. TICKET, M.D.

Gibson, F. S. The Diagnosis of Diaphragmatic Hernia with Acute Obstruction. *J. Am. Med. Ass.* 1919 xciii 1719.

From a review of the literature one is impressed with the infrequency of correct pre-operative or antemortem diagnosis. Five physical signs are to be noted: (1) displacement of the heart, (2) drawing in of the abdomen, (3) intestinal noises in the chest, (4) a change in the percussion note and absence of

breath sounds, and (5) variation in the character of the signs when the patient remains motionless as well as when he changes his position.

The author reports three cases of traumatic diaphragmatic hernia in which it was difficult to employ the aid of the roentgenologist because of the patient's condition. Careful study of the signs and symptoms was therefore of the utmost importance.

In each of the three cases reported there had been an injury: in one a stab wound, in another a fall, and in the third a crushing injury to the upper portion of the abdomen. All of the symptoms noted were dependent upon complete obstruction of some portion of the gastro-intestinal tract associated with certain secondary phenomena incident to the inclusion of an abdominal viscus within the thoracic cage. The physical signs aside from the evidence of obstruction were limited definitely to the thorax and an exact diagnosis could be made with the means usually employed in routine examination. Displacement of the heart to the right and evidence of relaxed tissue at the base of the left lung associated with fixation of the costal margin on the same side were the important signs upon which the diagnosis was based.

HARRY W. FINE, M.D.

Most of the grafts take. When the menopause occurs it is generally more prolonged gradual and analogous to the normal menopause than if grafting has not been performed.

Of the authors thirty one patients treated by ovarian transplantation twenty five were traced. Six in whom the uterus was conserved menstruated regularly without menopausal symptoms. Of the nineteen subjected to hysterectomy 4 per cent were free from menopausal symptoms. In 21 per cent the menopausal symptoms were mild in 63 per cent moderate and in 10.5 per cent severe.

T. FLOYD BELL, M.D.

EXTERNAL GENITALIA

Markov N. The Construction of an Artificial Vagina from the Urinary Bladder (*Kuenstliche Vaginabildung aus der Harnblase*). *Z. Akus.* 1920, 13.

The use of the urinary bladder for the construction of an artificial vagina is justifiable only when the bladder is unsatisfactory as a urinary reservoir and cannot be made satisfactory. The purpose of the operation is to render possible the performance of sexual intercourse. In both of the author's cases there were vaginal, rectal and vesical defects caused by severe protracted childbirth.

In the first case the urethra had been completely destroyed and the posterior wall of the bladder formed a cloaca which extended into the degenerated scar tissue of the vagina. On the posterior wall of the vagina between two bands of scar tissue there was a rectovaginal fistula 3 cm. in length.

Operation was performed in two stages under spinal anesthesia. The rectal fistula was corrected and then the artificial vagina was constructed. The posterior wall and part of the lateral walls of the bladder were mobilized and sutured to the remnants of the vagina thus covering the defect in the vagina. The anterior bladder wall was left *in situ*. After a period of one and a half months the ureters were transplanted into the rectum. Tubal sterilization was completed and the portio vaginalis was freed from extensive adhesions and sutured into an incision in the vertex of the bladder.

The newly formed vagina was from 11 to 12 cm. long and permitted the introduction of two fingers. The patient urinated by rectum. Defecation occurred independently of micturition. Coitus which at first was painful became quite painless.

In the second case there was a perineal tear with scar formation and in the scar a rectal fistula 3 cm. long with its upper border adherent to the posterior wall of the bladder which had been completely destroyed. Only 1.5 cm. of the anterior portion of the urethra remained and this was obstructed. The vagina had been destroyed and was embedded in scar tissue.

Seven operative procedures were carried out. Suture of the rectal fistula was unsuccessful as was suture of the vesical fistula. The rectal fistula was finally

closed after the formation of an artificial anus. Then a plastic operation was performed and the artificial anus was closed. The ureter was transplanted into the rectum. A bilateral salpingo-oophorectomy was done and the urinary bladder elevated and freed above the symphysis to the abdominal aponeurosis. It was necessary to suture the bladder wall directly to the skin of the vulvar ring. The bladder mucosa covered all sides of the destroyed vagina. The newly formed vagina was from 11 to 12 cm. long and permitted the introduction of two fingers. Coitus was absolutely painless.

T. PETERSON (G)

Gorizontov N. The Treatment of Primary Carcinoma of the Vagina (*Zur Therapie des primären Scheidencarcinoms*). *Sibirsk. Irch. leor. Klin. Med.* 1923, 11: 542.

Primary carcinoma of the vagina is rare. According to Hecht its incidence is between 1.5 and 2.5 per cent. Operative treatment is to be recommended only rarely as its results are usually very poor. Combined roentgen and radium treatment offers better prospects and is used in most clinics. The author discusses in detail the methods, dosage and results of this treatment in some of the leading clinics. One of the tables shows that in 146 cases treated in the period from 1913 to 1926 (most of which were inoperable) a five year cure was obtained in 16 (10.9 per cent). Up to the present time the primary mortality has been difficult to determine.

The author reports the technique used and the results obtained in seven of his own cases. In two of four (three inoperable) which were treated with combined roentgen and radium irradiation primary healing occurred within an observation period of thirteen and eight months respectively.

TREV (G)

Brady L. Fibroma of the Vulva Containing an Epithelial Inclusion Cyst. *Arch. Surg.* 1929, 117: 1061.

Fibromata of the vulva are not common. Fewer than 175 have been reported. The majority arise in the subcutaneous connective tissue but quite a large group originate in the extraperitoneal portion of the round ligament.

These tumors usually appear at first as firm smooth round or oval nodules under the skin. They may become pedunculated as they increase in size and may have a marked resemblance to a male scrotum. They are firm to palpation unless the circulation becomes impaired. They vary from small nodules to tumors of enormous size. It has been shown that nearly one fifth become sarcomatous. The size of the tumor may cause symptoms or there may be no symptoms unless malignant change or inflammation occurs.

The author reports a case of large fibroma of the vulva which probably originated from one of the terminal fibers of the extraperitoneal portion of the round ligament. It had appeared as a small nodule ten years previously and had become a pedunculated

inflammations in the material of the Breslau University Gynecological Clinic. This question is of great importance because in the majority of the cases the operations are performed at an age when the sex organs are essential not only for sexual function but also for the general health.

In the Breslau Clinic as in almost all clinics only chronic cases treated unsuccessfully for a long time by conservative measures are operated upon unless vital indications necessitate immediate surgery. No routine treatment is carried out; the indications for operation being determined after a longer or shorter period of conservative treatment according to the findings in the particular case.

The records for the period from 1924 to 1927 show a decrease in the frequency of operation even though as compared with the frequency of surgical treatment in other clinics (from 10 to 50 per cent) it was quite high (36 per cent). Comparison of salpingectomy, stomatoplasty and defundation with the more radical operations shows that the primary mortality of the latter was twice as high as that of the conservative procedures, but a review of the permanent results (the time between the operation and the follow-up examination varied between one and four years) showed that the results of salpingectomy were considerably poorer than those of the more radical operations. The more radical operations gave better results especially as regards freedom from recurrence. The disadvantages of radical surgery as regards castration symptoms are relatively slight. Reimplantation of the ovary did not prevent castration symptoms.

While the radical operative methods are undoubtedly preferable, conservative measures are not unjustified since the women operated upon conservatively 20 per cent became pregnant. Nevertheless conservative operative procedures should be limited in favor of the radical operations. In the individual case the indication depends upon whether the possibility of later pregnancy is considered of more importance than the better prospects of permanent cure offered by radical operation, a decision that can often be made only during operation.

KLAUS DIERKS ()

Martinotti A. Experimental Studies of the Motor Function of the Fallopian Tubes (Ricerche sperimentali sulla funzione motoria della tuba falloppiana). *Arch Ital di ginec* 1929 x 221

The author reports experiments carried out with human and rabbit fallopian tubes. The tubes were isolated and perfused with Ringer's solution in a special apparatus which he devised.

In the human tubes Martinotti noted definite movements of both the longitudinal and the circular fibers, some of which were independent of each other and some of which were synergic. Ganglion cells are necessary for peristaltic movements and such cells could not be demonstrated in the walls of the tubes; peristaltic movements were observed only when groups of ganglion cells of the ovarian plexus

or Frankenhauer's ganglion remained attached to the specimen. The rhythmical contraction of the longitudinal muscles which were seen in all cases and were not affected by cocaine or atropin were evidently automatic muscle movements.

The intensity and frequency of the automatic movements seemed to be related to a certain extent to the cyclic periods of the ovary. While the differences were not very great, the movements seemed to be less energetic and less frequent in the first part of the cycle, that is, the period of development of the follicle, which corresponds to the proliferative phase of the endometrium, than in the third phase after rupture of the follicle, when the ovum begins its passage through the tube, the formation of a corpus luteum begins and the secretory phase of the endometrium occurs. In the latter period the contractions were more intense and more frequent. The circular fibers were inactive in the first part of the cycle and began to function in the last days of the third part, when there was apparently an increase in the automatic excitability of the tube such as occurs also in the beginning of pregnancy.

The increased excitability of the smooth muscle fibers of the tube in the third period of the cycle was noted also in the rabbit fallopian tubes.

ADOLPH G. MORGAN, M.D.

Albano G. What Happens to the Introduced Iodized Oil After Salpingography? (Was geschieht mit dem eingeführten Jodoil nach einer Salpingographie?) *Zentralbl f Gynaek* 1929 p 1594

On the basis of two cases of bilateral sacrosalpinx which he had under observation for four weeks and six months respectively and in which he made frequent X-ray examinations, the author believes that iodized oil remaining in the tubes for a long time may lead to calcareous incrustations and even to stone formation. This was indicated by constantly increasing granulation of the oil droplets which was apparent in the roentgenograms and by the soft to chalky consistency of the iodized oil mass found at operation.

THELIE (G)

Norris G. C. and Behney G. A. Ovarian Transplantation with the Report of Thirty One Cases. *Surg Gynec & Obst* 1919 xlii 642

In cases treated by the authors in which the removal of all ovarian tissue was imperative, transplantation by the Blair Bell method was practiced. The technique is described in detail. The authors divide the ovary into small pieces as they believe that when the grafts are small they become vascularized more quickly and there are more takes. The development of multiple retention cysts is less apt to occur and the grafts are less apt to become tender. The graft is introduced into the rectus muscle and completely surrounded by the muscle. Strict asepsis and hemostasis are essential. The grafts probably do not live more than two or three years. They frequently become tender for a day or two each month. They rarely cause serious trouble.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Stiere The New Formation of Muscle Cells in the Wall of the Pregnant Uterus (Die Neubildung von Muskelzellen in der Wand der schwangeren Gebärmutter) *Anal An*, 1929 LXVI 27

The author shows that the observation of Koelliker (1849) that numerous new muscle cells are formed in the wall of the uterus during pregnancy was correct. The wall of the uterus which consists of derivatives of the mesenchymal tissue is stimulated to unusual growth during pregnancy first by the rapidly growing ovum, and second by the hormones of the embryo germ. As Sellheim says, the uterus rejuvenates itself.

The mesenchyme of the uterus can easily be stimulated to special function as we can find in it histiocytes in the form of resting wandering cells in the loose connective tissue and in the form of adventitia cells. In addition the blood contains undeveloped mesenchyme cells in the form of lymphocytes which can change themselves in the tissue with the aid of histiocytes and in this way to the different cell forms (Maximow and Bloom).

The author shows that the muscle cells are connected with each other by very delicate bridges of plasma and therefore form a net-like syncytium. Nevertheless two layers can be distinctly differentiated. First there is the supravascular layer, the superficial layer which behaves in pregnancy just as it was formerly assumed to behave—that is, the cells enlarge without increasing in number and decrease in size again during the puerperium. This layer is poor in connective tissue. Second there is the vascular and submucous layer which is rich in connective tissue. In this area numerous new muscle cells are formed during pregnancy from the histiocytes and from the lymphocytes of the blood which escape from the blood vessels. The author observed this process up to the third month of pregnancy. After the fourth month scarcely any lymphocytes are found but large numbers of histiocytes are formed in the vascular walls which after their separation again become muscle cells. Other histiocytes change themselves into fibrocytes and of these some are again changed into muscle cells toward the end of pregnancy.

Therefore the wall of the uterus shows an increase in muscle cells at the end of pregnancy. The new muscle cells develop from (1) special forms of histiocytes (myeloblasts of Joachimovits), (2) the histiocytes of connective tissue and the adventitia cells of the vessel walls, (3) the lymphocytes of the blood and (4) large fibrocytes.

During the puerperium a large number of muscle cells are destroyed. The mesenchyme takes over the

role of scavenger of the decomposition products. Macrophages are formed from the histiocytes and also from the lymphocytes of the blood which escape in spite of the presence of a relative anaemia. Strikingly few neutrophile polymorphonuclear leucocytes are to be found in the wall of the uterus during the puerperium. They lie usually within the mucous membrane and there take on the scavenger work. Many of them wander out into the cavity of the uterus and are expelled with the lochia.

NEUMANN (G)

Dieckmann W J Further Observations on the Hepatic Lesion in Eclampsia *Am J Obst & Gynec* 1929 XXVII 757

Although the lesion produced in the experiments reported in this article was not the typical lesion of eclampsia, the author believes that the mechanism producing it was the same as the mechanism causing eclampsia in the human female. He attributes it to the congestion of red blood cells in the portal vessels of the midzonal area with hemorrhage beginning at this point and necrosis in the involved tissues. He concludes that, as a result of marked hemorrhage and necrosis as well as portal thrombosis produced in some of the cases, substances absorbed from the intestinal tract and concentrated in the portal system overload the portal system under the conditions of the general circulatory injection of tissue fibrinogen and constitute an additional factor hanging about coagulation.

One of the striking features of the lesion was the rapidity with which extensive damage occurred as was evidenced in the case of a dog which received 1 c. cm. of lung extract one hour after a full meal and died three hours later. This result suggests that when an extensive lesion occurs in human eclampsia it may develop rather suddenly.

The author's findings emphasize the importance of limiting the intake of meat protein and maintaining good intestinal hygiene in the last months of pregnancy.

In the discussion of this report, EWING stated that in examining the liver in a very early case of eclampsia he found the entire fine hepatic arterial system thrombosed. On careful staining it appeared that the lesion began with hyaline necrosis of the endothelial cells of the hepatic arterioles which was followed by fusion of the muscle coats of those vessels. Ewing concludes that no lesion produced in the portal system would cause such infarcts. He is of the opinion that the hepatic lesion is most marked because the disease is essentially a disturbance of the function of the liver.

E. L. CORNELL M.D.

mass 15 cm long. It contained a tube lined by several layers of squamous epithelium which was probably produced by trauma that forced a strip of skin down into the tumor. T. FLOYD BELL, M.D.

MISCELLANEOUS

Pascali S. A Case of Lactation in the Non Pregnant and Non Puerperal State (Di un caso di regolare portata latte fuori della gravidanza e del puerperio). *Clin ostet* 1929 xxxi 537

The case reported was that of a woman nineteen years of age who first menstruated at the age of twelve years. Menstruation had been regular but scanty. At the age of sixteen years the patient was married to a man who was suffering from pulmonary tuberculosis. The Wassermann test was negative in both. The patient said that soon after her marriage without suction or any other provocation she began to have a slight secretion of milk which thereafter had progressively increased. At the same time she began to gain in weight. Her weight had increased from 47 to 65 kgm. Salpingo-oophoritis was found on the right side. The external genitals were normal.

The author reviews the theories regarding lactation in the nonpregnant state and concludes that in this case the lactation was due to defective ovarian secretion. The theory of an antagonism between

ovarian secretion and lactation was confirmed by the fact that the secretion of milk and the size of the breasts diminished on the administration of ovarian extract. ANDREW G. MORGAN, M.D.

Frassinetti P. Pelvipерitonitis Immediately Following Curettage of the Endometrium (Pelvipерitonite ad insorgenza immediata consecutivamente a raschiamento dell'endometrio). *Polichia* Rome 1929 xxxvi sez. chir. 445

The case reported was that of a girl seventeen years of age who was subjected to curettage for metrorrhagia. Dilatation was effected with a Hegar dilator.

The author states that curettage may cause infection of the pelvic peritoneum by carrying bacteria into the uterus from without by opening up an infected cavity thereby bringing about endogenous infection or by injuring the walls of the uterus to such an extent that infection is caused by bacteria which are so few in number or of so low virulence that they would not cause infection in the absence of such injury.

For the prevention of infection Frassinetti suggests the use of modified Hegar dilators with four grooves in the sides to permit septic material to flow out and prevent its being forced into the tubes.

ANDREW G. MORGAN, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

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NEWMAN (G)

Dickmann W J Further Observations on the Hepatic Lesion in Eclampsia *Am J Obst & Gynec* 1929 LXVII, 757

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C L CORNELL M D

Heine L. Ocular Indications for Interruption of Pregnancy and for Sterilization (Ueber okuläre Indikationen zur Unterbrechung der Schwangerschaft und zur Sterilisierung) *Arch f Augenheilk* 1929 c 41 439

Four groups of ocular indications for the interruption of pregnancy are suggested but only the first is a strict indication

1 Nephrosis as manifested by (a) retinitis albuminurica detachment of the retina retinal hemorrhages (b) uramic and other eclamptic visual disturbances

2 Myopia and glaucoma

3 Iridocyclitis and choroiditis

4 General involvement of the nervous system and endocrine disturbances which cause predominantly ocular manifestations

The author discusses the indications in ten cases not only from the point of view of the ophthalmologist but also from the broad social and humanistic point of view. Of particular interest was a case of familial bilateral glioma in three children only one of whom was cured by roentgen treatment (ten years observation)

Other possible indications considered are keratoconus keratomalacia pulsating exophthalmos detachment of the retina hypophyseal tumor retinal and vitreous hemorrhages and various general ailments with ocular manifestations. Heine says that because of the lack of sufficient clinical data it is difficult to state whether pregnancy has or has not an unfavorable effect on these conditions

PAUL WIAZ (G)

Whitehouse B. Abortion Its Frequency and Importance *Brit M J* 1929 ii 1993

In 3 000 hospital and private patients Whitehouse found that the ratio of abortions to births was 1:4.7. In a total of 11 410 pregnancies the incidence of abortion was 17.2 per cent and in the total 3 000 cases the number of women who had aborted at some time during their sexual life equalled 35.3 per cent. In the cases of 1 208 pre-war patients the incidence of abortion in 6 021 pregnancies was 17.7 per cent and the ratio of abortion to births at term 1:4.6. In 1 245 post-war cases the incidence of abortion was 16.9 per cent and the ratio of abortion to births 1:4.8.

In the cases of 493 tertiary syphilites the incidence of abortion was 37.3 per cent almost identical with the incidence of abortion from all causes viz. 35.3 per cent. Syphilis does not increase the predisposition to abort during the early months of pregnancy. However if the stillbirths are included with the abortions the incidence of abortion is increased by 22.1 per cent giving the high total of 59.4 per cent. In the cases of 28 congenital syphilites no abortions or miscarriages occurred.

Whitehouse discusses the vitality of the germ cells and states that as parity increases there is a progressive increase in the number of women who abort.

The development and function of the uterine decidua are stimulated and maintained by a hor-

mone elaborated first in the graafian follicle and then in the corpus luteum when the oocyte has left the former and are controlled by the anterior lobe of the pituitary gland. Of 300 women who gave a clinical history of 3 or more abortions uterine lesions were present in 53.3 per cent and evidence of chronic inflammation in the pelvis in relation to either the genital tract or the pelvic peritoneum was found in 26.6 per cent.

The largest number of abortions occur during the second and third months of gestation. Mall found 50 per cent of the ova he examined during this period to be pathological. Disease of the chorion frequently co-exists. Pathological forms are caused by external influences rather than by anatomical or physiological defects in the ovum or spermatozoon. In support of the influence of environment is the fact that when the ovum is implanted in an abnormal position where the decidua is absent or defective as for example in the fallopian tube 96 per cent of the embryos are abnormal.

Impairment of nutrition resulting from faulty implantation, abnormal decidual development, absence of essential food factors or the existence of lethal toxins is a potent factor in the causation of early abortion. Much importance is attached today to nutrition and the influence of various food factors upon sterility. Whitehouse discusses at length the importance of Vitamin E.

In conclusion the author states that he has had one case of contagious abortion in which *Bang's bacillus* was recovered from the vaginal discharge.

ROLAND S. CROW, M.D.

LABOR AND ITS COMPLICATIONS

Vaughan A. Maternal Mortality and Its Relation to the Shape of the Female Pelvis *Proc Roy Soc Med Lond* 1929 xii 191

The author states that in spite of more antenatal care and better midwifery the maternal mortality rate in England and Wales shows no improvement as compared with the rate of twenty years ago. In primitive countries where women are accustomed to manual labor childbirth is associated with little difficulty. The author believes that the difference in the maternal mortality rate in such countries and in countries in which the physical activity of women is limited is due in part to a difference in the shape of the pelvis and the development of the sacroiliac joints.

GEORGE W. PRELAN, M.D.

PUERPERIUM AND ITS COMPLICATIONS

Pasquini F. Is Puerperal Chills an Anaphylactic Phenomenon? (Se il brivido puerperale debba ritenersi un fenomeno legato alla anafilassi?) *Riv Ital di ginec* 1929 x 185

Recently it has been suggested that puerperal chills may be caused by haemolytic shock. To determine whether this theory is correct the author examined the blood during the chills and made graphs

of the chills. As he found no signs characteristic of anaphylactic shock such as retardation of the coagulation time, a decrease or disappearance of the platelets, transitory eosinophilia, or inversion of the leucocyte formula, he concludes that the chills are not anaphylactic phenomena, and that the lowering of the blood pressure and the decrease in the leucocytes occurring after delivery are due to causes other than flocculation of the blood plasma. He states that Moutier and Rachet obtained phenomena similar to hæmolytic shock with variations in the leucocytes on the injection of distilled water as well as of milk.

Other evidence that the puerperal chill is not an anaphylactic phenomenon is the observation made by Arthur that in dogs and rabbits the anaphylactic attack is not prevented by dissection of the vagus. Apparently therefore the attack is a peripheral nerve reaction. The graphs which the author made of the puerperal chills show that the chills are of a central and not a peripheral type and therefore can not be caused by anaphylaxis.

AUDREY G. MORGAN, M.D.

NEWBORN

Roffo, L. A Case of Extra Uterine Life without Respiration. (Sopra un caso di vita apnoica extra uterina). *Clin. ostet.* 1929 xxi 467.

The case reported was that of a female child which was born at the beginning of the eighth month of pregnancy and died seven and a half hours later. The mother, who had had four deliveries and one abortion, had a positive Wassermann reaction. The child weighed 2,060 gms. It was 46 cm. long and apparently normal. It cried soon after birth and although the crying was not very vigorous it was not so weak as to cause anxiety. No special attention was paid to the respiratory movements.

At autopsy the lungs were found to be solid and fleshy and looked like those of a fetus. Small pieces sank in water. The stomach and intestines were dilated and filled with air.

The literature reports forty six cases of children with atelectatic lungs who survived for from a few minutes to seventy hours. In thirty one cases the lungs were completely atelectatic but in fifteen they showed small aerated zones. Some writers on the subject have claimed that the atelectasis is a preagonal or postmortem phenomenon and that the children could not have lived in a condition of apnoea but Macaggi believes that air not reaching the alveoli may reach territories in the bronchi in which the exchange of gas is possible and that a certain amount of gas exchange may take place through the walls of the stomach and intestine which are generally full of air. Another compensatory factor is skin respiration.

In a histological examination of the lungs in his case the author found that the atelectasis was not complete. There was air throughout the bronchi and a few alveoli had undergone moderate and irregular distention. He thinks that the insufficiency of the lung tissue was due chiefly to the fact that the child was premature although the mother's syphilis may have had something to do with it.

AUDREY G. MORGAN, M.D.

Yagi, H. Birth Injuries in the Newborn. Part III. Autopsical Results of Intracranial Haemorrhage. *Japanese J. Obst. & Gynec.* 1929 vii 335.

Yagi, H. Birth Injuries in the Newborn. Part IV. Mortality Statistics of Newborn Children and Investigation of the Cause of Death Based on Autopsy. *Japanese J. Obst. & Gynec.* 1929 xii 345.

Of 144 fetuses on which autopsies were performed the cause of death was intracranial hæmorrhage in 34 per cent and asphyxia and pneumonia in 28 per cent. Of the cases in which death of the newborn is caused by hæmorrhage the bleeding is subdural in 88 per cent, leptomeningeal in 26 per cent, intraventricular in 18 per cent, intracerebral in 10 per cent and epidural in 6 per cent. Hæmorrhage and suffocation are closely related to the duration of the labor and the character of obstetrical intervention.

ABRAHAM A. BRAUER, M.D.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY, AND URETER

Blumenthal, N. *The Clinical Aspects of Suppurative Paranephritis (Die Klinik der eitrigen Paranephritis)* (Verhandl d 20 russ Chir Kongr Moskow 1928)

The author collected 1 500 cases of paranephritis of which 200 were Russian cases and 1 300 were reported from other countries. The right and left sides were affected equally often. Bilateral paranephritis was found in only 2 per cent of the cases. The youngest patient was nine months old and the oldest seventy years old.

Of the etiological factors trauma in the kidney region and the lifting of heavy loads are the most common. In about 20 per cent of the cases the paranephritis developed as a complication of previously existing pyonephrosis, renal calculi, abscesses, carbuncle of the kidney or renal tuberculosis. The infection spread from the kidney to the surrounding cellular tissue either by way of the lymphatics which connect the kidney with the paranephritic tissues or by contiguity. In 3 per cent of the cases the inflammatory process spread from the neighboring organs to the paranephritic tissues from a perforated duodenal ulcer, infection of the biliary passages or suppurative pancreatitis. Among these the author includes an unusual case of primary paranephritis observed by him following a direct injury of the paranephritic tissues. In 3 per cent of the cases reviewed the paranephritis developed after a labor in 15 per cent as a complication of acute appendicitis and in 35 per cent metastatically following a local suppurative inflammation such as a furunculosis, carbuncle, paronychia, eczema, angina or inflammation in the antrum of Highmore.

The author does not concur in the belief that in 80 per cent of the cases the paranephritis develops in the kidney itself since in several cases the kidney was found to be normal on dissection after paranephritis. Blumenthal believes that the infection enters the paranephritic tissue through the numerous branches of the azygos and hemiazygos veins. In the majority of cases of paranephritis he found the urine and the function of the kidney normal. The urine contained leucocytes, albumin and pus only when there were abscesses in the cortical layer of the kidney. In most of the cases the paranephritis developed on the posterior aspect of the kidney where most of the fatty tissue is located, an area which is rich in lymphatic and blood vessels and exposed to trauma. It occurred next most frequently at the lower pole and third most frequently at the upper and anterior aspects of the kidney.

The treatment can be only surgical. The mortality in the 1 500 cases reviewed was 14.6 per cent. When

simple incision was done it ranged from 4 to 14 per cent whereas after incision and exposure of the kidney it ranged from 18 to 25.5 per cent.

Koch (Z)

Friedrich, R. *The Clinical Aspects and Diagnosis of Paranephritic Abscesses (Zur Klinik und Diagnostik der paranephritischen Abszesse)* (Zeichn f urol Chir 1929 xxviii 17)

The author divides paranephritic abscesses into metastatic abscesses and paranephritic abscesses developing by way of the lymphatics and by continuity. Those of the first group are caused by a bacterial embolus from a more or less distant focus of infection. Those of the second group are secondary to a carbuncle of the kidney caused by a bacterial embolus which becomes lodged for example in a renal artery.

When a carbuncle of the kidney is not present simultaneous microscopic examination of the urine is of little help in the diagnosis during the first few weeks. However tenderness in the kidney region and possibly a prominence may lead to the correct diagnosis. When the abscess develops at the lower pole of the kidney an inflammatory edema and inflammation of the iliopectineus muscle manifested by pain on flexion and extension of the thigh may result. The abscess may develop into a gravitation abscess in the lacuna musculorum. In cases of abscess at the upper pole there is cessation of diaphragmatic breathing. A characteristic feature is the constantly high temperature when the functional test gives no definite clue to the condition. In the first few weeks the sediment of the clear urine presents isolated leucocytes. Later the urine becomes cloudy. When the roentgenogram shows a rather large indistinct shadow X-ray examination may lead to the correct diagnosis.

The author does not approve of the exploratory puncture advised by many as it is easy to push the aspiration needle through the abscess into the still healthy kidney. The difficulty in the differential diagnosis between paranephritic abscesses and renal abscesses is not of much importance as operation is necessary in both conditions and the correct diagnosis is easily made at the time of the operation.

The treatment consists in wide incision and drainage. After the establishment of drainage the fever usually falls by crisis and healing soon begins. In cases of metastatic abscess the prognosis as to life is usually very good when operation is done before perforation into the peritoneal cavity occurs.

Of the author's four fatal cases two were cases of a suppurative renal process of lymphatic origin and two were cases of paranephritic abscesses developing by continuity. In the author's cases of metastatic

abscesses there were no deaths. The total mortality in Friedrich's cases was 9.3 per cent.

A. ROSENBERG (Z)

Thomas B. A. Observations on the Diagnosis and Treatment of Movable Kidney. *J. Urol.* 1929, xvi, 603.

The author believes that many patients with movable kidneys fail to receive treatment that would save them years of invalidism, renal destruction, and even loss of life. Neglect or improper treatment of nephroptosis may result in persistent bacilluria or pyelitis, hydronephrosis, loss of renal function, or destruction of the kidney. Thomas was led to the study of the seventy-five cases which he reviews in this article by the common failure of external abdominal supports to provide satisfactory relief of pain, neuroses, gastric disturbances, and evidences of infection of progressive renal damage, and the complete relief afforded by nephropexy after months or years of troublesome disabling palliative treatment.

The cases reviewed are limited to those of acquired displacement of the kidney, either unilateral or bilateral, associated or not with general visceroptosis, in contradistinction to cases of congenital anomaly. They include cases of simple ptosis, unilateral or bilateral, treated palliatively or operatively, and cases associated with hydronephrosis, pyelitis, pyelonephritis, pyonephrosis, calculus, or tumor.

It was found in this series that the subjective symptoms presented are by no means an accurate indication of the mobility of the kidney. The degree of mobility can be determined only by urological examination.

Thomas states that the number of ptosed kidneys demonstrated by pyelography, which would remain undiagnosed without this procedure, is incredible. Ureteral catheterization and pyelography are of value also because they enable the urologist to determine the presence or absence of renal retention, ureteral kinks, hydronephrosis, calculus, pyelitis, polycystic kidney, and tumors of the kidney, and to differentiate diseases of neighboring organs.

In the treatment of ptosed kidney, the outstanding object must be not only the relief of subjective symptoms but also the prevention of insidious destruction of the kidney by hydronephrosis and infection. Therefore an exact standardized method of routine examination is necessary. In general, the therapeutic procedures may be grouped as palliative and operative. In the cases of persons who are predisposed to or have developed general visceroptosis, prophylactic measures such as proper diet and exercises designed to improve posture and muscular and organic vigor are very beneficial. The treatment recommended by Phillips cannot be surpassed. In the cases of patients who are underweight, confinement to bed for from a month to six weeks on a liberal diet is the first requisite.

Palliative treatment is indicated in mild cases in which the subjective symptoms are relieved by rest

or abdominal support and periodical urological check-ups show no development or progression of hydronephrosis, infection, or any other pathological condition in the kidney. Palliative treatment is contra-indicated when (1) subjective symptoms are not controlled by supportive appliances, (2) the threat of renal damage from urinary retention and infection is not controlled, (3) severe infection, calculus, or tumor of the kidney is present, (4) there is rotation of the kidney or a kink in the ureter, and (5) the kidney is movable to more than the first degree.

The author is of the opinion that the operative treatment of movable kidney has much to recommend it. He states that under no circumstances should the incidence of failure exceed 10 per cent. Surgical failures can be ascribed usually to faulty technique in fixation of the kidney, incomplete removal of fatty tissue between the posterior surface of the kidney and the lumbar muscles to which it is to be fixed, failure thoroughly to mobilize the kidney and ureter and free them from adjacent adhesions or fascial restrictions, and lastly, too short confinement of the patient to bed after the operation. The patient should remain in bed for at least four weeks.

The method of fixation used by the author is essentially that described by Kelly. Three triple mattress sutures are used. The upper suture is inserted through the posterior capsule at the juncture of the upper and middle thirds of the kidney, and the two others are placed at lower levels. The ends of the upper suture are brought through the intercostal muscles above the twelfth rib, and those of the lower two sutures through the lumbar muscles.

HENRY L. SANFORD, M.D.

Walters W. and Braasch W. F. Urinary Obstruction and Hydronephrosis: Resection of the Renal Pelvis, the Kidney and the Ureter. Report of Nine Cases. *J. Am. Med. Ass.* 1929, xcii, 1710.

Walters and Braasch report on ten operations performed on nine patients at the Mayo Clinic for the relief of urinary obstruction and hydronephrosis. In four cases, five hydronephrotic renal pelvises were resected, and in four of the five cases the resection was successful. In the case in which the resection was done bilaterally with an interval of four months between the operations, the results in both kidneys were excellent. This the authors believe was the first successful bilateral resection on the renal pelvis for hydronephrosis which has been reported.

Resection of the hydronephrotic or pyonephrotic portion of a duplicated kidney was performed in three cases, and ureteropyeloneostomy for obstruction of the ureteropelvic juncture in two cases. In one of the cases in which ureteropyeloneostomy was performed, the obstruction involved a solitary kidney and was acute and complete; in the other, the obstruction followed pyelolithotomy performed elsewhere. These operations also were successful. In one of the cases in which ureteropyeloneostomy was

performed more than a year has elapsed since the operation

Pre operative and postoperative cystoscopic examinations functional tests of each kidney separately and of both kidneys combined and pyelograms of the kidneys and their pelvis which were operated on were made. Pyelograms following resection of the hydronephrotic renal pelvis were practically normal in appearance. Following the operation the degree of infection in the kidneys diminished and the function improved.

In only one of the nine cases was secondary nephrectomy necessary. In this case the hydronephrotic pelvis had a capacity of approximately 350 ccm and infection and edema caused obstruction of the ureteropelvic juncture. The decision to attempt renal resection rather than nephrectomy was probably unwarranted because of the extreme degree of hydronephrosis and the destruction of the renal parenchyma.

In the other cases the patients made a good clinical recovery and the findings of cystoscopic examination as regards urinary drainage and renal function were satisfactory.

A short description is given of the important details of the technique of the operative procedures and the literature of previously reported cases is reviewed.

Helmholz H F. Experimental Pyelitis and Its Relationship to Urinary Infection in the Infant *Brit J Child Dis* 1929 LVII 24

In experiments carried out by the author on rabbits the frequency of infection of the bladder is compared with infection of the upper portion of the urinary tract and the fact that the colon bacillus after intravenous injection did not persist in the bladder when the upper portion of the urinary tract was sterile seemed to indicate that the infection was of the ascending type.

On the clinical side the predominance of the infection in girl babies during the diaper age is still the outstanding feature in the determination of the mode of infection. To this must be added the observations of Schwartz who found that bacilluria is twice as common in girl babies as in boys. No one has proved that the colon bacillus passes into the circulation as the result of parenteral infection such as tonsillitis and otitis media nor in diarrheal disease. David and McCall showed that colon bacilli appear in the bloodstream only after complete obstruction of the bowel. Even if colon bacilli are injected into the blood stream they do not appear in the urine. It seems therefore that although results from experiments on animals cannot be directly applied to man there is enough confirmatory evidence in what is known of pyelitis in infancy to warrant the assumption that infections with the colon bacillus take place in the same way.

The beneficial results obtained from treatment with alkalies in pyelitis have never been satisfac-

torily explained. It is certain that the degree of alkalinity reached in the urinary tract is never sufficient to interfere in any way with the growth of the colon bacillus. In a series of experiments carried out by growing colon bacilli in alkaline and acid media no difference was noted in the pyrogenetic power of the toxins produced. In another series of experiments in which colon bacilli were grown for a considerable number of generations in acid broth and in alkaline broth there was no retardation of growth when the organism was transferred from an acid broth of a hydrogen ion concentration of Ph 5.5 to an alkaline broth of a hydrogen ion concentration of Ph 8.4 but in a number of instances there was almost complete inhibition of growth for from four to six hours when the transfer was made from alkaline to acid broth. In a series of therapeutic experiments carried out on animals infected hematogenously with the colon bacillus in which mercurochrome methenamine and hexylresorcinol were administered, by far the best results were obtained with methenamine.

In conclusion the author says that it is essential that every case of pyelitis be checked bacteriologically before cure is pronounced and that cases in which the condition does not clear up after an intensive course of treatment by methenamine be referred to the urologist for careful study of the urinary tract.

Gérard M. The Functional Integrity of Tuberculous Kidneys in Certain Cases of Renal Tuberculosis (Intégrité fonctionnelle de reins tuberculeux dans certaines cas de néphrotuberculose) *J d'ur Méd et chir* 1929 XXVIII 209

The author reports five cases of renal tuberculosis in which the Ambard test was normal or nearly normal.

In Case 1 the tuberculosis developed in two periods separated by an interval of a year and a half. Cystoscopy revealed the presence of gross suppurative lesions in the right kidney. Ureteral catheterization demonstrated that the right kidney did not function and that the left kidney which was undeniably tuberculous had an excellent functional capacity.

In Case 2 cystoscopy revealed a lesion of the right kidney. Ureteral catheterization proved that the left kidney which was apparently healthy did not function whereas the right kidney which was manifestly tuberculous had good function.

In Case 3 the tuberculosis developed in two periods separated by an interval of eleven years. Cystoscopy revealed cicatricial lesions of the right kidney and active lesions of the left kidney. Ureteral catheterization showed that the function of the right kidney had been completely destroyed whereas that of the left kidney was excellent.

In Case 4 cystoscopy demonstrated a marked lesion of the right kidney. On ureteral catheterization it was found that the left kidney had practically

no function whereas the right kidney which was tuberculous, had excellent function

In Case 5 cystoscopy indicated a lesion of the left kidney. The orifice of the right ureter appeared normal. Ureteral catheterization demonstrated that the lesions were bilateral. The right kidney had a very good functional capacity. PAGE

Mathé G P Cortical Abscess of the Kidney
J Am M Ass 1929 xciii 1862

Cortical abscess of the kidney is of two types (1) the acute hematogenous type secondary to staphylococcal infection elsewhere in the body which is usually manifested in the skin and (2) the subacute or chronic urogenous type associated with pyelonephritis and secondary to traumatic lesions of the kidney and stasis in the upper or lower urinary tract

Cortical abscess of the focal hemorrhagic type is often mistaken for influenza or an abdominal lesion such as appendicitis, salpingitis, gall bladder disease, acute pyelonephritis, and perinephric abscess. Its presence cannot always be diagnosed positively, but may be strongly suspected from the history of a skin infection. It is distinguished from pyelonephritis by the relative paucity of urinary symptoms in proportion to the severity of the illness and by the fact that the infecting staphylococcus is more likely to be found in the urine.

Cortical abscess of the urogenous type is suggested when a patient with chronic pyelonephritis secondary to urinary stasis suddenly develops a chill and fever accompanied by pain and enlargement of the kidney which are not relieved by drainage with the ureteral catheter.

In the hematogenous type of cortical abscess the infection begins in the cortex near the kidney capsule and extends toward the periphery. In twenty-four cases cited by the author early conservative operation, such as decapsulation, incision or excision of the abscess saved the kidney from further destruction. In nine cases, nephrectomy was done for acute focal suppurative nephritis with abscesses of the cortex and in one case for carbuncle of the kidney. It was performed also in two cases in which incision and drainage were done too late.

In the urogenous type of cortical abscess the infection extends toward the periphery from the collecting tubules and pelvis causing the formation of abscesses in the medulla as well as in the cortex and more or less destroying the entire parenchyma. The treatment is radical nephrectomy. This was done successfully in forty-three cases cited by the author.

HENRY L. SANFORD M.D.

Chute A L. The Recognition and Treatment of Renal Lithiasis *Minnesota Med 1929 xii 731*

The stones which are held firmly in the kidney the large ones which cause atrophy of the kidney tissue by pressure as they increase in size and predispose to suppuration those which are especially destructive do not cause the marked symptoms

that are produced by smaller stones which block the kidney outlet and cause acute dilatation of the renal pelvis. The large stones may produce only moderate pain usually only a backache and this symptom may occur only at long intervals.

In examination of the urinary tract with the X ray the patient should be carefully prepared and the whole urinary tract should be roentgenographed. When a barium meal or enema is indicated it should be given after the roentgenograms of the urinary tract have been made as bits of barium left in the intestine may overlie the stone bearing area of the kidney.

Shadows which may be confused with those of urinary stones are produced by intestinal gas, gall stones, calcified abdominal glands, phleboliths and calcified vessels.

Chute believes that a stone in an infected kidney should be removed rather promptly. In cases of bilateral renal stones operation should be urged strongly although it is perhaps not quite so imperative as in cases of stone in a single kidney. When bilateral stones are present the better kidney, as indicated by functional tests, should be operated upon first. When a stone is present in a kidney and another stone is present in the ureter of that kidney both stones should be removed at the same time or the renal stone should be removed first in order to stop the destruction of renal tissue.

In Chute's opinion it is a mistake to drain a kidney pelvis through a pyelotomy wound especially by tube drainage as stubborn fistulae have followed this procedure. In the majority of cases of renal stone nephrolithotomy is required.

Ureteral stones associated with any particular degree of infection should be removed surgically likewise stones in the ureter which cause more than moderate pain or occasional disability. After the removal of a stone low in a ureter the urologist should always make sure that he can pass a probe through into the bladder without perceiving a sensation of grating. JACOB S. GROVE M.D.

Weiser A. The Indication for Nephrectomy in Cases of Cystic Kidney (*Zur Indikation der Nephrektomie bei Cystenieren*) *Verhandl d. deutsch. Gesellsch. f. Urol 1929 p 229*

As the symptoms of cystic kidney are most varied sometimes suggesting pyonephrosis some times a malignant tumor and sometimes contracted kidney with a tendency toward uraemia the correct diagnosis is often made only at operation. Since in the vast majority of cases (according to Lejars 95 per cent and according to Luzzatto 81 per cent) the condition is bilateral, only conservative treatment is to be considered. Recently good results from puncture of the tensely filled cysts have been reported from widely different sources. Therefore nephrectomy should not be done in the absence of urgent indications. One of the urgent indications for nephrectomy is the development of tuberculosis, a tumor, or a calculus

pyonephrosis in the congenital cystic kidney. The author reports two cases in which operation was followed by a good result.

The first case was that of a man twenty seven years of age who had a stone the size of a pigeon's egg and two stones the size of peas in the right renal pelvis and three large stones in the right ureter. The stones were removed by pyelotomy and ureterotomy, but because of the infection present the renal pelvis was not sutured. Under treatment with daily irrigations it closed slowly within six weeks. Two months later it re-opened spontaneously as a stone had again become lodged in the ureter. Because of progressive cachexia and in spite of an existing fistula a nephrectomy was done. When the patient was re-examined eight months later he was entirely free from symptoms.

The second case was that of a man forty six years of age who gave a history of progressive enlargement of the abdomen on the left side and frequent hematuria. There was no excretion of indigo-carmin on the left side. At operation a large tumor of the left kidney was extirpated through a lumbar incision. The specimen was found to be permeated by numerous cysts. Three months after the operation the patient was still in excellent condition.

The author concludes that nephrectomy is indicated also in cases of unilateral cystic kidney with unilateral renal tuberculosis or tumor. As in both of these conditions the amount of renal parenchyma is decreased by the disease itself the loss of parenchyma resulting from the operation is inconsequential. Moreover it is more than balanced by the removal of the toxins of the tuberculosis or carcinoma.

In the discussion of this report KUEMMEL SR (Hamburg) said that he had operated upon three cases of cystic kidney. In one decapsulation was done because of hemorrhage and was successful in arresting the bleeding. In the two others nephrectomy was done four and five years ago respectively and both patients are now cured. Kuemmel cited also the case of a child who recovered following nephrectomy for cystic kidney with life threatening hemorrhage. In the case of an infant six months old an assistant obtained a good result from nephrectomy for cystic kidney with life threatening hemorrhage. Kuemmel believes that children bear unilateral nephrectomy for congenital cystic kidney even better than adults. He concludes that we can abandon absolute conservatism in the treatment of cystic kidney, provided the indication for operation is carefully established.

CASPER (Berlin) stated that he is not convinced that we are justified in proceeding less conservatively. He said that while vital indications for nephrectomy have been recognized there are cases in which the operation is not absolutely indicated. He has had two cases with typical symptoms under observation for seventeen and twenty five years. He emphasized the importance of determining what indications are to be considered vital.

RUMPEL (Berlin) called attention to the fact that there are cases in which the process of cystic degeneration has progressed to different degrees on the two sides. In one case in which he performed a nephrectomy for hemorrhage the removed kidney showed complete polycystic degeneration whereas the other kidney presented only a few cysts. The patient is still alive. In another case in which death resulted one kidney had been split by another surgeon because of suppuration and Rumpel did a nephrectomy because the fistula refused to heal. Death resulted from the cystic condition of the other kidney.

OPPENHEIMER (Frankfurt) reported the case of a patient who lived for twenty five years after a unilateral nephrectomy although the other kidney was also cystic. He agreed with Casper that the vital indications for operation must be definitely established.

SCHLAGINTWEIT (Munich) demanded a careful differentiation between the indications in cases of cystic kidney and those in cases of solitary cyst of the kidney.

BLATT (Vienna) emphasized the strictly conservative standpoint of the school of his teacher Rubritius. With the aid of ten pyelograms he showed that the diagnosis of cystic kidney can seldom be made from pyelograms nor from other roentgenograms. He stated that the claims of Graubner that it is possible to differentiate definitely between a cystic kidney and a hypernephroma is incorrect.

HELV (Berlin) reported from Borchardt's clinic that the differential diagnosis between hypernephroma and cystic kidney from a pyelogram is very difficult.

KUERNSEL SR (Hamburg) agreed with Schlagintweit that cystic kidney should be sharply differentiated from cyst of the kidney.

A. ROSENBERG (Z)

BLADDER, URETHRA, AND PENIS

Knutsson F. On the Technique of Urethrography. *Acta radiol.* 1929 x 437.

The author describes the technique he employs for urethrography and a penis clamp which facilitates the examination.

He states that only 1 or 2 cm of the so called supracolicular elongation of the posterior urethra occurs in the urethra, the remainder being due to the collection of the opaque fluid in a fold of the mucous membrane at the bottom of the bladder. The elongation is therefore usually only apparent and no importance can be ascribed to it in the estimation of the size of the prostate gland.

GENITAL ORGANS

Gutierrez, R. Later Results of Surgery of the Seminal Vesicles. *J Am Med Ass.* 1929 xciv 1944.

Gutierrez reports the results of 100 seminal vesiculectomies performed in the cases of patients with

grave mental disorders and chronic inflammation of the seminal vesicles. Other foci of infection had been eliminated previously. In all of the operations the perineal route was employed. The author states that with visualization of the organs and the use of recognized surgical technique it is possible to remove the glands without causing any disturbance of physiological spermatic function. In the cases reviewed the operations were extra urethral, extravesical, and extraperitoneal. In no case did a perineal or rectal fistula develop and in none was the operation followed by peritonitis, incontinence of urine or epididymitis.

Forty eight per cent of the patients were benefited and some of them were discharged from the institution as cured. The spermatic and genital functions remained unchanged. After vesiculectomy the ampulla becomes gradually distended by its normal physiological process and finally assumes the function of the vesicles, becoming the reservoir of the semen and acquiring the power of expulsion during ejaculation.

On re examination of patients subjected to vesiculectomy six or seven years previously the ampulla was found patent and easily palpable by rectal touch in more than 21 per cent. The external genital organs were the same as before the operation was performed. The prostate gland was found normal in about 80 per cent of the cases.

JACOB S. GROVZ, M.D.

Alvey E. P. Dislocation of the Testis. *Surg. Gynec. & Obst.* 1929 xlii 600.

A search of the literature from 1800 up to the present time revealed only twenty three cases of traumatic luxation of the testis. The author reports two more—one a compound dislocation that was successfully treated by open operation and the other the first true traumatic crural testis on record.

The position of the dislocated testis depends upon three factors: (1) anatomical abnormalities, (2) obstruction to dislocation in certain directions, and (3) the direction and force of the blow. The usual cause is severe injury such as that inflicted by wagon wheels passing over the genital and inguinal regions and other severe crushing injuries about the scrotum. It is at first difficult to diagnose the dislocation because of the acute swelling after the injury. A little later, however, the absence of a testicle from the scrotum and the presence of an ovoid tumor in another locality make the diagnosis relatively easy.

In six of the cases reviewed the dislocation was of the pubic type in five, of the superficial inguinal type in three, of the penile type in two, of the perineal type, and in three, of the inguinal canal type. In three cases there was a compound dislocation of the testis through the scrotal wall. In one case it was impossible to determine the site of the dislocated testis exactly.

The results of treatment are good.

MAURICE I. MELTZER, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS MUSCLES, TENDONS, ETC

Pearse H E Jr and Morton J J The Stimulation of Bone Growth by Venous Stasis *J Bone & Joint Surg* 1930 xii 91

The authors describe experiments which they carried out on dogs cite reports from the literature and report two clinical cases which show that fractures with delayed union may be healed by venous stasis hyperaemia

H EARLE COWELL MD

Leriche R and Bauer R Subacute Cortical Staphylococcus Osteitis of the Shafts of the Long Bones in the Adult (*Les ostéites diaphysaires corticales subaigües à staphylocoques de l'adulte*) *Rev d'orthop* 1929 xxvii 383

The authors report three cases of subacute cortical staphylococcus osteitis of the shafts of long bones in adults. They state that the lesions are at first very limited and unlike those of acute osteomyelitis in adolescents. As a rule there are practically no general symptoms but sometimes the temperature is slightly elevated. The first symptom is a dull pain which is not at all comparable with that of Brodie's abscess. A little later palpation reveals a fusiform swelling continuous with the bone which is due to the periosteal reaction. When multiple osteomyelitis develop simultaneously a search should be made for metastatic foci of infection even if it is impossible to find the primary focus from the history. In cases with only a single localization slow evolution of the lesion slight pain and the appearance of diaphyseal swelling suggest sarcoma. The sarcoma of Ewing may be accompanied by a slight rise in the temperature.

After subacute cortical staphylococcus osteitis has progressed the roentgenogram should prevent error in the diagnosis but in early attenuated cases the first roentgenogram is not sufficient. When diaphyseal osteitis is suspected the case should be followed for several days. An increase in the swelling and in the lesions as revealed by a second roentgen examination will confirm the diagnosis. Puck

Bury P C and Capp C S Primary Human Glioma of Bone with Special Reference to the Roentgenological Diagnosis *Am J Roent* 1930 xviii 1

Hæmangioma of bone especially of the vertebrae is often discovered at autopsy but seldom causes symptoms. Of 154 bodies in which Töpfer sectioned the vertebral column at autopsy angiomas were found in 11.93 per cent.

Hæmangioma occur most frequently in the vertebrae and the bones of the skull. Their roentgen ap-

pearance is that of numerous large sunburst trabeculations radiating from a common center and out from the plane of the bone. In cylindrical bones the gross roentgen appearance may resemble that of a giant cell tumor but the loculations are somewhat smaller and within them there is a fine fibrillar framework. The cortex of the bone is usually destroyed but may extend into the center of the expansive portion of the tumor. The periosteum remains intact.

The microscopic appearance is that of a benign hæmangioma usually of the cavernous type.

The treatment is excision when possible followed by roentgen therapy.

The authors report eight cases.

ELVIN J BERKHEIMER MD

Leriche R Ewing's Sarcoma and Metastatic Staphylococcus Osteitis of the Cortex of the Diaphysis (*Sarcome de Ewing et ostéite diaphysaire corticale métastatique à staphylocoques*) *Lyon chir* 1929 xxvii 536

Ewing's sarcoma is probably a reticulo endothelial sarcoma. It occurs in the diaphyses of young adults and resembles in its course a subacute osteomyelitis being accompanied by leucocytosis slight fever and slight pain. The author reports a case of cortical staphylococcus osteitis of the diaphysis in which differentiation from Ewing's sarcoma was very difficult.

The patient was a woman thirty four years old who in the beginning of October was treated by vaccination for furuncles of the neck. During the night of October 10 she suddenly experienced pain in the left thigh. This was followed by doughy swelling and difficulty in flexion of the thigh. For a year the patient's temperature had been between 37.9 and 38 degrees C.

A roentgenogram showed a small cavity in the diaphysis which suggested osteomyelitis but another roentgenogram made a week later suggested beginning sarcoma. The patient was seen by a number of surgeons and all but one of them made a diagnosis of Ewing's sarcoma on the basis of the second and a third roentgenogram. When the author saw her on November 30 she was subfebrile and had a leaden color. On the basis of the sudden beginning of the illness in the course of furunculosis temporary pain in the other femur the occurrence of pain on pressure and the rapid and constantly subfebrile evolution of the illness he made a diagnosis of metastatic cortical osteomyelitis. Operation was performed December 3.

Incision into the most prominent part of the tumor revealed lardaceous tissue with no muscle structure and no pus. In front of the diaphysis there was in-

able newly formed bone and in the cortex there was a small cavity about 1 cm. long and 2 or 3 mm. deep which contained a soft reddish tissue. The walls of the cavity appeared to be normal. The author believed he had been mistaken in his diagnosis and that the tumor was a Ewing sarcoma but after removing the tissue for bacteriological examination he left four Carrel tubes in place for irrigation.

Bacteriological examination showed a pure culture of hemolytic staphylococcus aureus. The condition was therefore a typical osteomyelitis. The wound suppurated but the patient recovered in two months with a moderate hyperostosis of the diaphysis. The author believes that the vaccination rendered the staphylococci incapable of producing pus and necrosis.

ALEXANDER G. MORGAN, M.D.

Jones H. T. Cystic Bursal Hygromata. *J. Bone & Joint Surg.* 1930 xii: 45.

Excision was carried out in each of the fifty five cases of cystic bursal hygroma reviewed by the author. This does not mean that excision has been done as a routine procedure at the Mayo Clinic; it indicates that only cases in which pathological material was available were included in this study. Subsequent information was obtained from twenty seven of the patients. In two cases the time which had elapsed following the excision was three months or less. In the twenty five other cases the time interval since the excision varied from nine and a half months to fourteen years and three months and the average time interval was five years and eleven months. In none of the twenty seven cases was recurrence reported. Therefore it may be concluded that complete excision of cystic hygromata is likely to result in cure.

With regard to the question of the presence of fibrin and fibrinoid tissue in the process of disintegration the author states that judging from the finding of fibrin chemically in the necrotic center of a bursa in one case and from the morphological and staining reactions of certain portions of sections in another it appears reasonable to conclude that the formation of fibrin plays some part in the development of at least certain cystic hygromata. However he believes with Robertson that it is not wise to conclude that the connective tissue of and by itself changes to an intermediate substance fibrin or fibrinoid and then to the liquefied cyst contents.

With regard to the question as to whether the liquid contents of cystic hygromata is entirely degenerative in origin or at times is partly made up of a transudate Langenkamp held that hygromata represent a purely degenerative process. He found the tissue bounding the cavity always avascular. In numerous instances Jones noted that the wall of the hygroma had vascular processes projecting into the cavity. He believes that fluids from these capillaries will reach the cavity of the cyst.

Trauma both acute and long continued plays an important part in the causation of cystic hygromata. The rôle of infection is doubtful.

Jones concludes that the conditions at work in the development of cystic hygromata must be similar to those involved in the development of bursa in the embryo and young child and that bizarre types of bursa are probably accounted for by absence of the environmental conditions necessary for the development of normal bursa.

Bick E. M. The Surgical Pathology of Synovial Tissue. *J. Bone & Joint Surg.* 1930 xii: 33.

Following a description of the normal synovial tissue the author describes the condition of the synovial tissue in tuberculous non specific acute subacute chronic acute purulent and syphilitic synovitis osteochondritis dissecans synoviomata and rheumatic fever synovitis.

II EARLE CONWELL, M.D.

Venezian E. Primary Pathological Processes of the Joint Capsule (Processi morbosì primitivi della capsula articolare). *Chir. d. organi di movimento* 1909 xiv: 266.

The first case reported was one of cyst of the meniscus of the right knee of a man thirty seven years of age. The patient stated that about ten years previously he had struck the knee against the ground in a fall. For several days after the injury it was swollen but there was no limitation of movement. Several weeks later a swelling appeared on the external side of the joint line and increased in size for two or three months. At the time of examination the patient complained of pain and weakness of the leg. There was no locking of the joint.

Operation revealed on the external side of the meniscus a tumor the size of a nut which was made up of cysts of various sizes with connective tissue walls rich in cells and showing papillae.

Tumors of this type are most common in young males. They are often attributed to trauma but the importance of trauma has been exaggerated. The author believes that the tumor in his case was not due to trauma as there were no signs of inflammation. He states that tumors of the type under discussion are a form of pathological growth the cause of which is unknown. They are not malignant as they never show a tendency toward unlimited growth. They originate from the capsular and para articular tissues. It is possible that they correspond to a special evolution of cells which are ontogenetically similar to synovial cells. The diagnosis is not difficult. Operation is contra indicated until they reach the stationary stage.

The second case reported was one of capsular hamangioma of the right knee of a boy three years of age. The family and personal histories were negative. In September 1926 the patient struck the knee in a fall. After incision and the removal of blood clots the swelling which resulted from the injury receded and there were no more symptoms until the night of May 6 1927 when intense pain developed in the joint. When the patient was seen by the author in April 1928 the knee was in flexion to

about 165 degrees movements were very limited and the muscles were atrophic. Operation revealed a cavernous capsular hemangioma in the subsynovial tissue of the anterior border of the knee and in the subpatellar fat. Uneventful recovery resulted. Histological examination showed that the tumor was not caused by the trauma but was due to a congenital anomaly in the arrangement of the vessels of the capsule.

ANDREY G. MORGAN, M.D.

Giuliani G. The Action of the Tendons on the Development of the Centers of Ossification (L'influenza dei tendini sullo sviluppo dei nuclei di ossificazione). *Chir. d'organi da movimento* 1929, XIV, 243.

Giuliani reports experiments performed on rabbit in which the Achilles tendon on one side was sectioned and the effect on the centers of ossification was studied.

The results showed that the action of the tendon has a marked effect on the growth of the epiphyseal center of the process of the calcaneum. The latter does not reach its full development unless the action of the muscle is continuously transmitted by the tendon. Histological examination indicated that when the cartilage is not stimulated by the tendon it is not capable of fulfilling its biological task of ossification. Koenig's examination showed progressive atrophy of the center and atrophy and rarefaction of the bone of the proximal end of the calcaneum.

These findings indicate the importance of muscle action transmitted through the tendons in the conditions which are called bone diseases of adolescence. All centers of ossification which are in connection with strong muscles feel the action of the tendons and the whole skeleton requires the action of the muscles for its normal development.

ANDREY G. MORGAN, M.D.

Nicotra A. Calcification of the Nucleus Pulposus of the Intervertebral Disks (La calcificazione del nucleo polposso dei dischi intervertebrali). *Radiol. med.* 1929, XVI, 977.

Nicotra reports three cases of complete and one case of incomplete calcification of the nucleus pulposus of the intervertebral disks. The symptoms in such cases are always those of irritation of the spinal nerve roots and meninges. Nicotra attributes the condition to inflammation followed by the precipitation of calcium salts in the gelatinous embryonic substance of the notochord which persists in the center of the disks. He is of the opinion that in the majority of cases it stops in the stage of swelling and that it is often the cause of radiculitis even when the roentgenogram does not show calcification. He believes that the inflammation may have occurred long before the development of the nerve root and meningeal signs and the roentgen examination and is probably due most often to localization of the influenza virus in the disks. He suggests the name "infectious chondroneuritis" for the condition.

ANDREY G. MORGAN, M.D.

Felrson E. L. Jr. Osteochondritis of the Symphysis Pubis. *Surg. Gynec. & Obst.* 1929, XLV, 831.

Felrson reports in detail four cases of osteochondritis of the symphysis pubis. In three cases the condition followed a urological lesion and in one case an operation for inguinal hernia. Operation was performed for the osteochondritis in all. Three of the patients recovered and one died of septicemia.

The most constant symptom of osteochondritis of the symphysis pubis is pain in the region of the pubis which radiates down the legs and is aggravated by motion. On palpation a localized point of tenderness is discovered over the symphysis. The roentgenogram shows marked proliferation of the bone.

Beer has reported twelve cases of periosteitis and osteitis of the symphysis pubis in which the condition followed suprapubic cystostomy. He attributed the inflammation to injury of the periosteum or pressure produced by a suprapubic drainage tube. All of Beer's patients recovered without operation.

ROBERT S. REICH, M.D.

Polacco E. Free Bodies in the Hip Joint (Contributo allo studio dei corpi mobili dell'anca). *Arch. di chir.* 1929, LXVI, 618.

Polacco reports three cases of free bodies in the hip joint. The patients were women thirty-five, forty-two and twenty-three years of age. The symptoms were those of arthritis deformans. The free bodies were very evidently secondary to arthritis of the hip and there seemed to be a certain relation between the severity of the arthritis and the number of free bodies. In one of the cases the arthritis was gonorrheal but in the others the cause was unknown. In all three the macroscopic and microscopic character of the joint bodies was the same.

The free bodies consisted of spongy bone showing a delicate trabeculation containing fatty marrow which was surrounded by a thin external shell of compact bone. The external shell was surrounded by a periosteal membrane from which vessels passed into the external layer of bone. Evidently such free bodies and the conditions necessary for their development in the synovial fluid. The difference in the vitality and growth of free bodies formed in clinical cases and those produced experimentally is due to the fact that in the clinical cases the free bodies are detached gradually rather than suddenly.

The free bodies vary in size from that of a millet seed to that of an orange. They may have a smooth or a rough or a nodular surface. They adapt themselves in shape to the space available and to the mechanical function of the part of the joint in which they lie. Sometimes they are solitary and sometimes they are formed in large numbers. They vary in weight from a few centigrams up to 20 gm. or more. They occur most frequently in the knee and next most frequently in the elbow and shoulder. They are rarely found in the hip. Although all of the author's patients were women, free joint bodies are more common in men than in women.

ANDREY G. MORGAN, M.D.

Lombard P. The Remote Sequelæ After Forty Five Years of a Purulent Arthritis of the Hip Occurring in Early Childhood (Les conséquences éloignées après 45 ans d'une arthrite purulente de la hanche survenue dans la première enfance) *Rev d'orthop.*, 1929 xxxvi 426

In the case reported the arthritis began during an attack of typhoid fever when the patient was three years old. After its acute inflammatory onset, the articular lesion continued to develop almost unnoticed for years. Softening of the bone which resulted in coxa vara discovered eighteen years later was followed by absorption. The femoral head disappeared and the neck which was gradually reduced in size ascended into the enlarged acetabulum and tended to become luxated into the iliac fossa. What was doubtless at first a chemical process started by infection and later progressing independently became complicated by disturbances of a mechanical nature. PACR

Bérard. Deep Connective Tissue Tumors of the Thigh (A propos des tumeurs conjonctives profondes de la cuisse) *Lyon chir.* 1929 xxvi 629

Bérard reports two cases of deep connective tissue tumors of the thigh. The first was that of a woman twenty six years of age who about five months previously began to have slight pain above and to the inner side of the left knee. Two months later progressive swelling of the region began. The general condition was not affected. At operation a connective tissue tumor of the fibrolipoma type was extirpated. Uneventful recovery followed.

While histological examination of the specimen revealed no atypical cells, the lower third of the capsule of the tumor was condensed and violet colored and was continuous with the periosteum of the femur. As a matter of precaution because of this suspicious area deep roentgen ray treatment is being given.

The second case was that of a woman of forty years whose left thigh had been increasing in size for two years. Incision showed a lobulated lipomatous mass with lobes varying from the size of a prune to that of two fists which extended into all the interstices of the muscles. The femoral vein was thrombosed and both the artery and the vein were compressed by the tumor. The neoplasm was extirpated together with about 30 cm. of the femoral vessels. Uneventful recovery followed.

The findings of the complete histological examination of the tumor will be published later. The author believes that the neoplasm was probably a tumor of the sheath of the femoral vessels. Deep roentgen treatment will be given as soon as the wound has healed.

In the discussion of this report TIXIER said that he had never seen a connective tissue tumor of the sheaths of the femoral vessels invade the muscles and he would not be surprised if an early recurrence developed in Bérard's second case.

AUDREY G. MORGAN, M.D.

Gilroy E. Pes Cavus: A Clinical Study with Special Reference to Its Etiology. *Edinburgh M. J.* 1919 xxxvi 749

Gilroy analyzes (48) cases of pes cavus and classifies them etiologically. He states that in cases of obscure causation the condition is probably of congenital origin. A congenital origin is not disproved by late onset of the symptoms.

The age at which symptoms develop is determined largely by sex. Females require treatment earlier than males, but this difference may be due to the differences in the shoes worn by males and females. However there is no evidence that shoes can produce pes cavus in a normal foot.

Hereditary cases of pes cavus appear to be limited to one sex in the family line. The transmission is direct.

Fever and other acute illnesses do not produce a deformity requiring operative interference.

Poliomyelitis is responsible for the majority of acquired cases of pes cavus and for a very severe deformity with a high incidence of associated defects.

With the exception of the cases due to poliomyelitis and those in which the condition develops during adolescence, pes cavus occurs with about equal frequency in the two sexes. In the poliomyelitis group the ratio of males to females in the cases reviewed was 6:3 and in the adolescent group also the incidence in males was high.

The distribution of the deformity in congenital cases is comparable to that of club foot. The adolescent group is similar in all respects.

In the cases reviewed by the author the ratio of unilateral to bilateral cases due to poliomyelitis was 6:3. In the fever group the number of unilateral and bilateral cases was about equal. Of three hereditary cases two were bilateral.

The most common additional deformity is equinus. This is a criterion of severity, not chronicity and is characteristic of a paralytic origin. It either precedes cavus or is coincident with it.

Trauma is an uncommon cause of the deformity. CHESTER C. GOY, M.D.

Fortin H. J. The Care of the Feet in Chronic Arthritis. *J. Lancet* 1930 i 36

Inability to walk may be attended by definite psychopathological changes. Therefore the care of the feet and the prevention of foot deformities are of special importance.

The results of infection or abnormal trauma which are most commonly associated with chronic arthritis of the feet are: (1) pronation defects, (2) depression of the longitudinal arches, (3) partially rigid and rigid flat feet and toes, (4) depression of the anterior transverse metatarsal arches, (5) bunions and hallux valgus and (6) spurs arising from the tendon of Achilles or the calcaneus. These conditions may give rise to considerable pain and may definitely aggravate the arthritis.

The treatment of flat foot includes primarily reduction of the weight to as near normal as possible,

proper support for the feet such as is afforded by correct shoes with the specific alterations indicated and strapping of the foot if necessary during the period of rather acute pain. The straps should be removed as soon as possible. As a rule shoes give sufficient support.

Contrast baths afford relief and should be used in addition to periodical professional and continuous home physiotherapy and exercises for correction of the broken arches. The simple methods of applying heat that the patient may employ in his home include the use of a baking machine, a cradle of carbon lights. He should be carefully instructed in the use of this apparatus by a physician or physical therapist. Heat may be applied for approximately twenty minutes once or twice a day and may be followed by certain specific exercises for the correction of the pronation and depression. It is difficult for the patient to apply massage himself as a rule this should be done only by trained persons.

With the physical therapy the author gives typhoid vaccine intravenously every four days. After the injection of the vaccine there is usually a reaction in which the temperature may reach 103 degrees F for one or two hours but the pains in the joints are usually considerably relieved and the range of motion is increased.

When in hallux valgus with bunion the bunion does not cause pain a shoe that gives the anterior part of the foot sufficient room should be provided. If the pain is severe surgical intervention such as the Mayo operation for bunion in which the head of the first metatarsal is removed may be necessary. Amputation of the great toe or amputation for marked deformity of small toes may be required.

For spurs conservative treatment is advisable. Palliative measures are often successful until the late inactive stage when even large bony spurs may be painless. The heels of the shoes may be replaced by soft sponge rubber pads or felt pads with a hole directly under the spurs may be inserted inside the heels of the shoes. Felt pads placed in the shoes on either side of the painful areas may increase the patient's comfort. The local application of unguentum hydragryi as a counterirritant may supplement heat and massage. Surgical intervention is seldom advocated as spurs are prone to recur after their removal and even if they do not recur the pain persists. However operation is justified if the spurs are very long and produce mechanical disturbances.

In cases of metatarsalgia in which it is impossible to straighten the toes the heads of the metatarsals may be removed to produce shortening. After shortening has taken place the toes can be straightened. Another measure for straightening the toes is transplantation of the long extensor tendons of the toes to an attachment just behind the metatarsal head. Capsulotomy of the metatarsophalangeal joints and the induction of ankylosis of the first interphalangeal joints.

When rigid flat foot does not cause pain and the patient is able to carry on his usual labor interfer-

ence should not be attempted. If it causes pain conservative physical therapy should be employed first especially if any passive supination remains. If mobility is not increased by a prolonged course of heat massage and exercises manipulation under anesthesia followed by the application of casts is necessary. Thereafter the patient should be provided with correct shoes to hold the feet in a natural position. If manipulation fails surgical intervention may be necessary. A wedge of bone may be removed from the inner side of the foot in an attempt to reform the normal longitudinal arch.

The discomfort of hallux rigidus may be materially relieved by the wearing of a shoe with a rigid sole. If this is not successful arthroplasty may be performed.

In conclusion the author says that the common deformities associated with chronic arthritis of the feet can often be prevented and their prevention or early care should be one of the physician's responsibilities in the medical phase rather than in the late or orthopedic phase of the disease.

SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Gentil F. The Results at the End of Twenty Years of the Use of a Pedicled Graft of the Fibula After Resection of the Tibia for Sarcoma (Résultats au bout de 20 ans d'une greffe pédiculée du péron après résection du tibia pour sarcome). Lyon chir. 1929 xxvi 465.

In August 1906 the author resected 9 cm of a tibia in which a central sarcoma had developed inserted into the defect a piece of bone obtained from the fibula of the same side and united the graft to the malleolus of the tibia by periosteum incompletely detached from the bone so that the graft was still supplied by its nutrient artery. Five months after the operation the patient was able to be up and to make normal movements of the foot and toes. Roentgenograms made in 1921, twenty years later showed that the bone was a true graft and had not been absorbed or replaced by new bone.

This case demonstrates that encapsulated sarcoma can be cured by free resection of bone and transplantation. The only complication was the formation of an abscess in the malleolus ten years and two months after the operation which necessitated the extraction of a piece of ureter wire.

MORLEY G. MARION M.D.

FRACTURES AND DISLOCATIONS

Moriconi L. Isolated Fracture of the Coracoid Process (Frattura isolata dell'apof. coracoide). Arch. ital. di chir. 1929 xxvi 395.

Moriconi reports an isolated fracture of the left coracoid process in a man twenty nine years old who was struck on the left shoulder by a stone weighing several kilograms which fell from a height of about 5 meters. He states that while in fixation of the shoulder or fracture of the glenoid fossa or the head

of the humerus all movements of the shoulder are painful in fracture of the coracoid process alone there is interference only with movement backward and forward raising of the arm, and flexion of the forearm on the arm that is movements brought about wholly or partially by the small muscles attached to the coracoid process. The diagnosis can be confirmed by roentgen examination.

Fracture of the coracoid process alone is rare and is sometimes mistaken for contusion. The mechanism of the fracture varies in different cases. The fracture may be caused by traction downward acting on the spine of the scapula. The author produced isolated coracoid fractures in cadavers by this mechanism.

Fracture of the coracoid process should be reduced as accurately as possible. After the reduction a roentgenogram should be made to see that the fragments are in good position since with poor reduction the function of the muscles attached to the process may be injured. In the case reported the author put on an immobilizing cast with the arm and shoulder in abduction and external rotation and the fore arm flexed on the arm. **AUDREY G. MORGAN, M.D.**

Brenkmann E. and Miloyewitch M. Four Cases in Which Ankylosing Grafting Was Done for Fracture of the Spine without Immediate Symptoms (Quatre cas de greffe ankylosante pour fractures de la colonne vertébrale sans symptômes nerveux immédiats). Rev. d'orthop. 19 9 1931 431.

The authors report four cases of fracture of the spine in which they did early grafting. A graft taken from the internal surface of the tibia was wedged between the posterior arches and the denuded spinous processes. It was buried deeply to prevent the formation of a painful scar.

In all of the cases the immediate results were excellent and in the first three the end results were also very satisfactory. In the fourth the operation was performed too recently for conclusions as to the end result. The time lost by the patient from work was reduced to the minimum being usually only four months. There seems to be no risk of remote complications. On their discharge from the hospital the patients were advised to wear an elastic corset for six weeks. This served for the dorsolumbar region. For the cervical region a Miners plaster cast was used. **PAGE**

Colp R. and Findlay R. T. Fractures of the Pelvis. Surg. Gynec. & Obst. 1929 48 84.

The authors report in detail thirty five cases of fracture of the pelvis. All but three of the patients were males. The ages varied from six to sixty eight years. In fifteen cases the fracture involved the ilium in twenty four cases the pubis in four cases the ischium and in one case the junction of the ischium pubis and acetabulum. In four cases it invaded the right acetabular cavity and in two cases the left acetabular cavity. In four cases the symphysis pubis was separated and in five cases there

was a dislocation or separation of the sacro iliac joints. In 48 per cent of the cases there were other fractures and in many cases there were other complications. Six of the patients died.

The most important symptom of fracture of the pelvis is pain. Shock is present in most cases and was quite marked in eighteen of those reported.

Of the complications injuries to the bladder are the most common and most serious. Hematuria was present in three of the cases reported and extravasation occurred in two.

The authors believe that little if anything can be done in the way of intervention to relieve deformities and displacements. They recommend complete rest in bed. In their own cases the patient is kept flat on his back for an average of thirty days. At the end of that time he is first moved in bed then permitted to sit in a wheel chair and finally allowed to walk. The average length of time following the injury before walking is allowed is thirty eight days. Complications requiring surgical intervention should be dealt with immediately. **RODOLPH S. REICH, M.D.**

Noland L. and Conwell H. E. Acute Fractures of the Pelvis. Treatment and Results in 125 Cases. J. Am. M. Ass. 1930 XCIV 174.

The 125 cases of pelvic fracture reviewed by the authors were seen in the period from January, 1920 to July, 1928. The ages of the patients ranged from nineteen to sixty two years and averaged thirty seven and a half years. The average stay in the hospital was sixty five days and the longest stay one hundred and thirty three days. Ninety eight of the patients were males. Seventy one of the fractures were caused by industrial accidents and 54 by accidents of civil life.

The pelvic fractures in women seen during the three years from 1920 to 1928 constituted only 10 per cent of the total number of such fractures caused by accidents of civil life whereas those seen during the five years from 1923 to 1928 constituted almost 50 per cent of such fractures. Seventy five per cent of the pelvic fractures in women were caused by automobile accidents.

There were 20 deaths in the series a mortality of 16 per cent. Of the 14 patients who died within twenty four hours after their admission to the hospital all had severe associated injuries which were regarded as necessarily fatal.

Of 3 patients who sustained an injury of the peroneal nerve 2 recovered entirely but 1 had a permanent disability necessitating further treatment for relief.

In a number of cases of fracture of the posterior ring and in the cases of Malgaigne fractures there was marked edema of the extremities which persisted over a period of several months and in some instances was disabling. In 2 cases marked edema of the thighs was associated with relatively minor fractures of the ilium near the sacro iliac joint. Such complications plainly the result of severe injury to the deep blood vessels and neighboring soft struc-

tures are sufficient to cause hesitancy in giving an early prognosis in any type of pelvic fracture

Good anatomical position was obtained in only about 60 per cent of the cases but excellent functional results were common in cases without good anatomical position

Open reduction for the correction of displacement of bony fragments was done in only 2 cases and in these only to relieve pressure exerted by the displaced fragments on the rectum and bladder In the authors opinion what appears to be poor position of the fragments is by no means always a constant cause of persistent pain and disability

The detailed description of the treatment includes a description of Conwells overhead pelvic frame device and his method of sacro-iliac reduction

HEY GROVES E. W. The Treatment of the Fractured Neck of the Femur with Especial Regard to the Results *J Bone & Joint Surg* 1930 xii 1

WHITMAN R. Remarks Introductory to a Demonstration of the Abduction Treatment of Fracture of the Neck of the Femur *J Bone & Joint Surg*, 1930 xii 11

HEY GROVES states that in recent cases of fracture of the femur of the extracapsular type the best results are obtained by the use of skeletal traction or Whitmans plaster method For fractures of the intracapsular type only two methods are worthy of consideration—the Whitman procedure and the pegging operation If the patient is young and active Hey Groves chooses the pegging operation He performs this operation also in the cases of weak elderly patients if the latter do not show bony union within three months under treatment by the plaster abduction method

While it is impossible to obtain union in all cases of non union by surgical intervention an open operation should be done whenever non union is found and the fracture examined If the head and attached portion of the neck are firm and the articular cartilage is well preserved the pegging operation should be performed If conditions are not favorable the reconstructive operation should be done The latter consists in removal of the head of the femur introduction of the neck of the femur into the acetabulum and re attachment of the greater trochanter and capsule farther out and downward on the shaft of the femur

WHITMAN calls attention to the fact that the abduction method takes advantage of the natural mechanics of the hip joint to approximate and maintain the fragments in their normal position

In 169 cases of intracapsular fracture treated by conventional methods which were reported by Katzenstein in 1928 the mortality was nearly 18 per cent and good results were obtained in only 11.5 per cent whereas in 176 cases of the same type treated by the abduction method which were reported by Lofberg in 1927 the mortality was 6 per cent and bony union was obtained in 67.5 per cent

It has been demonstrated that the danger of the abduction treatment is almost negligible and that union of transcervical fractures of the femur may be obtained by this treatment in the greater proportion of the cases

The long plaster spica is most comfortable and most efficient when it is properly applied As it permits change of posture it has extended the application of the abduction method to the treatment of patients who are infirm and aged

FLEVIN J. BERNHARTER M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Greenough, J. Operations on the Innominate Artery. Report of a Successful Ligation. *Irch Surg* 1929 22: 1484

The author reports a successful ligation of the innominate, carotid and subclavian arteries and abstracts the reports of purely one operations on the innominate artery collected from the literature 75 per cent of which were ligations. The total mortality of the ligations reviewed was 56 per cent, but the mortality of the last twenty five was 16 per cent.

Good exposure should be obtained by bone resection. The innominate artery should be ligated with strong material applied with a force between 3 and 10 lb. A stay knot should be used and the artery severed. If uninfected the wound should be closed without drainage.

If the operation is done for aneurysm distal as well as proximal ligation should be done and the sac extirpated or destroyed.

It is preferable to ligate the subclavian artery rather than the carotid. Ligation of the right innominate vein should benefit the circulation in the brain and the upper extremity.

The operation is justifiable and should be done early. J. S. PLATT M.D.

Leibovici R. Arteriography in Gangrene of the Lower Limbs (*L'artériographie dans les gangrènes des membres inférieurs*). *J. de chir* 1929 15: 293

Two kinds of substances have been injected into the arteries to render them opaque—lipiodol and aqueous solutions of opaque salts. Lipiodol can be used in only small amounts as it behaves in the vessels as a true foreign body. It travels rapidly when injected into the common femoral artery it reaches the foot in a few seconds. In the plantar arteries it may remain visible for as long as five minutes. Harvier and Lemaire have shown that it does not pass through the capillaries and is not absorbed. In the capillaries it is broken up into extremely small drops which are fixed by the tissues and are so small as to be invisible. A solution of sodium iodide on the other hand mingles with the blood and diffuses over the entire circulation of the extremity, so that a roentgenogram made after its injection gives a picture of the entire arterial system that is permeable. Sodium iodide solution disappears much more rapidly than lipiodol. If the circulation is free the arteries remain visible for only a few seconds.

The speed of the injection is important. If 1 or 2 cc of lipiodol are used the oil and the syringe should be warmed slightly in order that the injection may be completed in a few seconds. Harvier who

uses doses of from 10 to 12 cc injects more slowly at the rate of 1 cc per minute. A solution of sodium iodide must be injected rapidly as a weak solution gives as good pictures as a strong solution if the injection is sufficiently rapid. Attempts have been made to obtain longer visibility by blocking the circulation but because of the risk of damage to the endothelium from long contact with the solution this is not advisable. Concentrated solutions of sodium iodide are not tolerated perfectly by the endothelium. They sometimes cause an extremely painful vasoconstrictor spasm. They may also aggravate the obliterating arteritis and give rise to general intoxication. Lipiodol may aggravate the ischaemia by obstructing the arterioles and thereby stimulate the gangrenous process. Sicard who is an advocate of lipiodol recognizes this possibility and advises limiting the amount injected to 1 cc whenever possible. On the whole lipiodol appears less dangerous than sodium iodide but it gives a less accurate picture.

The localization of the arterial obliteration is usually easy in the femoral or popliteal artery. The opaque substance is arrested at the obstruction. However an arteritis may be responsible for a vasoconstrictor spasm which obliterates the artery completely. In the arteries of the leg the information given by arteriography may be rendered erroneous by several factors. The lipiodol may become lodged in the tibioperoneal trunk so that not a drop enters the anterior tibial or if a little enters the anterior tibial small opacities graduated in size and at a distance from one another may appear. In the posterior arteries it is so easier to affirm obliteration since not enough lipiodol is injected as a rule to render all of the arteries of the leg visible. Even when sodium iodide is used it is hazardous to affirm an obliteration on the evidence of a filling defect. In the foot lipiodol cannot be relied upon to fill the arteries. Sodium iodide solution is more dependable because of its homogeneous diffusion.

A knowledge of the state of circulatory sufficiency at the level of a proposed amputation is of still more importance than a knowledge of the site of obliteration. It is not justifiable to assume that nutrition of the parts is assured because their arterioles contain lipiodol. Prolonged visibility of the lipiodol represents pathological stasis. Amputation must be done well above the zone of stasis of lipiodol as stasis suggests circulatory insufficiency. It is the prompt disappearance not the visibility of the lipiodol that counts. Moreover invisibility of the collaterals does not mean that nutrition is insufficient. The anatomical passages are not macroscopic and are not injectable. Arteriography with sodium iodide has the same sources of error.

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The detailed description of the treatment includes a description of Conwell's overhead pelvic frame device and his method of sacro iliac reduction

Hey Groves E W The Treatment of the Fractured Neck of the Femur with Especial Regard to the Results *J Bone & Joint Surg* 1930 xii 1

Whitman R Remarks Introductory to a Demonstration of the Abduction Treatment of Fracture of the Neck of the Femur *J Bone & Joint Surg*, 1930 xii 11

HEY GROVES states that in recent cases of fracture of the femur of the extracapsular type the best results are obtained by the use of skeletal traction or Whitman's plaster method For fractures of the intracapsular type only two methods are worthy of consideration—the Whitman procedure and the pegging operation If the patient is young and active Hey Groves chooses the pegging operation He performs this operation also in the cases of weak elderly patients if the latter do not show bony union within three months under treatment by the plaster abduction method

While it is impossible to obtain union in all cases of non union by surgical intervention an open operation should be done whenever non union is found and the fracture examined If the head and attached portion of the neck are firm and the articular cartilage is well preserved the pegging operation should be performed If conditions are not favorable the reconstructive operation should be done The latter consists in removal of the head of the femur introduction of the neck of the femur into the acetabulum and re attachment of the greater trochanter and capsule farther out and downward on the shaft of the femur

WHITMAN calls attention to the fact that the abduction method takes advantage of the natural mechanics of the hip joint to approximate and maintain the fragments in their normal position

In 169 cases of intracapsular fracture treated by conventional methods which were reported by Katsenstein in 1928 the mortality was nearly 18 per cent and good results were obtained in only 11.5 per cent whereas in 176 cases of the same type treated by the abduction method which were reported by Lofberg in 1927 the mortality was 6 per cent and bony union was obtained in 67.5 per cent

It has been demonstrated that the danger of the abduction treatment is almost negligible and that union of transcervical fractures of the femur may be obtained by this treatment in the greater proportion of the cases

The long plaster spica is most comfortable and most efficient when it is properly applied As it permits change of posture it has extended the application of the abduction method to the treatment of patients who are infirm and aged

ELLEN J. BERKEHEIMER M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Ingeltrans P and Mlone J The Syndrome of Pallor and Hyperthermia in Infants After Operation (Contribution à l'étude du syndrome paleur hyperthermie chez les nourissons opérés) *Presse med* 1929 xxxvii 2184

The authors report two cases of pallor and hyperthermia in male infants following operation for strangulated hernia. One of the infants was a year old and the other two and a half months old. In both cases autopsy revealed intense congestion of the brain accompanied by external and internal hydrocephalus and no other visceral lesion.

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Muller G P Overholt R H and Pendergrass E P Postoperative Pulmonary Hypoventilation *Arch Surg* 1929 xix 1322

The authors were prompted to make this clinical study by (1) the frequency of positive reports from the roentgenologist in the cases of patients examined postoperatively, whose subsequent course indicated the absence of pulmonary complications, (2) the confusion in the use of such terms as postoperative pneumonia bronchopneumonia lobular atelectasis massive atelectasis lung reaction and infarct in descriptions of postoperative pulmonary complications, (3) the marked reduction in the vital capacity following operations on the upper part of the abdomen which was reported by Churchill and McNeil and by Powers, (4) the limitation of diaphragmatic function reported by Sise and its relation to the reduction in the vital capacity, and (5) the presence of pre-existing pulmonary pathological change and its effect on diaphragmatic function.

The investigations were made in twenty-five cases in which an operation on the upper part of the abdomen was to be performed. The cases were not selected as regards operative risk or the patient's general appearance but none of the patients had a deformity of the chest gross pathological changes in the lungs or ascites. In order that ample time might be spent in the study of each patient before and after operation care was taken that not more than two or three patients were under observation at the same time.

Daily notes were kept regarding pulmonary symptoms and physical signs. After the operation the examinations of the chest were made as thoroughly as the condition of the patient permitted. It was possible in all cases to examine the bases posteriorly by carefully turning the patient first on one side and then on the other. Measurements of

the circumference and expansion of the chest were made before operation and at intervals of two days after the operation. The tip of the xiphoid process and the third interspace in the midclavicular line were selected as fixed points for the measurements.

Determinations were made also of the vital capacity before and at intervals after the operation. The ordinary clinical spirometer was used. The vital capacity recorded was the highest of three trials.

The patients were studied fluoroscopically in the recumbent and erect positions by the central ray method. The diaphragmatic movements were recorded during the quiet (tidal) breathing and during the maximal respiratory phases (deep breathing). The positions of the domes of the diaphragm were marked directly on the fluoroscopic screen with a wax pencil and these tracings then transferred to cards for a permanent record. After the operation the various methods of roentgenoscopy were tried but the most workable plan and the one which caused least discomfort to the patients consisted in lifting them from the bed to the adjustable fluoroscopic table. Most of the patients suffered practically no pain and none of them at the time of the examination or later showed evidences of injury from this procedure.

Pre-operative roentgenograms were made as a routine. After the first four cases were studied it became obvious that the pre-operative roentgenogram should be taken with the patient in bed in order that it might be compared with the post-operative roentgenograms. In half of the cases studied roentgenograms were made during the expiratory phase as well as during the inspiratory phase. In some of the cases in which this study was not made the day before the operation roentgenograms were made when the patient returned three months later for follow-up examination were used for comparison. Great care was taken by the technicians to make all exposures with the patient in as nearly the same semi-Fowler position in bed. Lateral roentgenograms were made in more than half of the studies. The following conclusions are drawn:

1. A definite appearance characterized by prominence of the basal trunks haziness of the lung fields and elevation of the dome of the diaphragm which is found in roentgenograms after operations on the upper part of the abdomen is due to hypoventilation of the lung and should be regarded as normal.

2. This roentgenographic appearance is similar to that in cases in which the condition has been diagnosed previously as a pulmonary complication bronchopneumonia postoperative pneumonia or pathological lobular atelectasis.

The author believes that errors in amputations for gangrene are due largely to the fact that the condition of the larger arterial trunks is regarded as of more importance than the condition of the collateral circulation. He emphasizes that slow obliteration of the large trunks may take place in the absence of trophic disturbances.

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Öwre, A. The Clinic and Etiology of Postoperative Thrombosis. *Acta chirurg Scand* 1929 111 11

Thrombosis gives rise to pronounced slight or no local symptoms but is often attended by general symptoms. It is most frequent after laparotomies. According to DeQuervain 93 per cent of all death from thrombosis occur after the fortieth year of age. There is good reason to believe that postoperative thrombosis develops on the first day or one of the first days after operation.

Most of the commonly accepted theories as to the cause can be refuted. Conditions of the blood flow alone are not sufficient to explain the phenomenon and changes in the intima of the vessels have little effect in producing the condition. Changes in the blood itself however are more significant.

The author's studies as to the cause of postoperative thrombosis were based on the hypothesis that operations may produce changes in the blood influencing the agglutinability of the platelets and the coagulability of the blood. His investigations included determinations of the concentration of the blood, the rate of sedimentation of the blood corpuscles, the content of carbon dioxide in the serum, the calcium content of the plasma and serum and the rate of coagulation. From his findings in twenty-four cases he concludes that concentration of the blood may play a part in the causation of thrombosis although this has not been proved. He found that the rate of sedimentation is directly dependent on the extent of the operation and on infection. The carbon dioxide of the blood is lowest on the day or day after operation, the decrease being probably the result of the acidosis of hunger. A hitherto unknown variation in the calcium content of the plasma and a sometimes very marked differ-

ence between the amount of plasma and serum calcium in the same patient following operation were demonstrated. This change manifests itself partly by an increase in the calcium content of the plasma and partly by an increased difference between the plasma and serum calcium. The results regarding coagulation were not in agreement.

Theories attributing postoperative thrombosis to a circulatory disturbance, infection or alteration in the walls of the vessels are refuted by the fact that the condition does not occur in the portal vein.

The author concludes that thrombosis is first determined by alterations in the calcium metabolism and that when it occurs after laparotomy it may be due to the alteration in the calcium content of the blood brought on by acidosis. The fact that it is decidedly more frequent after the age of forty years may be accounted for by disturbances of calcium metabolism. The localization of thrombosis in the veins of the pelvis is probably to be explained by the slower rate of flow in these vessels.

VERNE G. BURDEN, M.D.

BLOOD TRANSFUSION

Blalock, A. The Oxygen Content of the Blood in Patients with Varicose Veins. *Arch Surg* 1929 112 98

Blalock has found that the oxygen content of the blood from the femoral veins of patients with varicose veins is higher than normal. In patients with unilateral varicose veins of the lower extremities the venous oxygen content is higher on the diseased side and the difference is accentuated when ulceration is present.

In studies of the effect of change in posture it was found that whereas in normal subjects the oxygen content falls rapidly when the standing position is assumed and rises in the recumbent position, in cases of varicosities changes in posture cause less alteration in the venous oxygen. Blalock suggests that the total flow of blood through a leg with varicose veins is increased.

NATHAN A. CROHN, M.D.

include in the last class the patient who must undergo an operation on the air passages which requires the sitting posture during recovery. He believes that avertin is contra indicated for operations which are likely to cause a rapid fall in the blood pressure and for cases of severe renal disease.

YOUNG reports that he has employed avertin in 154 unselected cases. He believes it is superior to ordinary anesthetics in the ease and comfort of the induction, the freedom from postoperative vomiting and the freedom from the common postoperative respiratory complications. For cases of operation on the pelvic floor he advises withdrawal of the solution from the lower bowel before the operation is begun. The obstruction to the air passages by the relaxation of the jaw and the tongue are easily overcome by the introduction of the artificial air way. Respiratory troubles have been fewer since he has restricted the pre-operative dose of morphine to $\frac{1}{4}$ gr. In several cases he has noted a marked fall in the blood pressure—in one case 50 points. In his series of 154 cases there were 2 deaths but neither of them could be attributed to the avertin.

LEWIS states that he has used avertin in 28 cases. He has noted that the patients on whom it had the most effect were those he would classify as 'sub thyroid' and those on whom it had the least effect were those who might be called hyperthyroid. The hyperthyroid patients recovered from the effects of avertin more quickly than the others. There has been no unpleasant incident following the use of avertin. Lewis regards it of value particularly in cases of goiter.

DE CAUX states that the chief disadvantage of the use of avertin alone for the induction of anaesthesia is the length of time it must be given before operation. In 25 laparotomies he was forced to supplement it with nitrous oxide and oxygen or nitrous oxide oxygen and ether. The more nervous the patient the more avertin he used. For bronchoscopy he prefers avertin to other drugs.

MANSELL says that while his experience with avertin has not been very extensive he believes that when it is used alone it does not give sufficient relaxation for operation, and that while it is of value as a preliminary narcotic it should not be employed routinely.

FRED C. ROBINSON, M.D.

3 The lung fields on the roentgenogram made at the height of the expiratory phase before operation are similar to those found in roentgenograms made after operation during full inspiration. Both show evidences of decreased thoracic volume and diminished aeration.

4 Transient positive physical signs in the chest are found frequently after operation on the upper part of the abdomen. A hasty diagnosis of pulmonary complication should not be made from the physical signs alone. Clinical signs and symptoms are of greater value and are usually present when a pulmonary complication exists.

5 The marked reduction found in the vital capacity after operations on the upper part of the abdomen are explained by changes in the chest expansion, the position and movement of the diaphragm and the volume of the lung.

6 The varying degrees of partial atelectasis which occur after operations on the upper part of the abdomen are due primarily to elevation of the diaphragm and restriction of its movements.

Dart C. ROBINSON, M.D.

ANÆSTHESIA

Koster H, and Kayman L. P. Spinal Anæsthesia for the Neck and Thorax. Its Relation to Respiratory Paralysis. *Surg. Gynec. & Obst.* 1909, vol. 617.

In order to obtain anæsthesia of the whole body in spinal anæsthesia the local anæsthetic introduced into the spinal canal is caused to diffuse to the medulla and brain stem. The authors carried out investigations to determine the safety of the method paying particular attention to the effect of the anæsthetic on the medullary respiratory center.

In experiments on frogs, guinea pigs and a cat concentrated solutions of neocaine were applied directly to the exposed medulla and cervical cord. Complete anæsthesia resulted but no effect was produced on respiration.

Further experiments indicated that the neocaine causes an interruption of physiological continuity of the sensory nerves with no interruption of conductivity through the motor fibers. This property of selective affinity explains the phenomenon of surgical anæsthesia of the entire body without paralysis of the respiratory (motor) center. The anæsthetic substances in solution are very rapidly fixed by nerve tissue (lipophilic substances) with which they come into contact and thereafter it matters not how the position of the patient is changed.

The authors discuss also the blood pressure changes in spinal anæsthesia. They state that even when the blood pressure drops to zero it is not considered alarming and stimulation is not resorted to. The Trendelenburg position to prevent cerebral anæmia is strongly advised. Postoperative headache is treated satisfactorily by magnesium sulphate enemas.

The authors experience in the induction of anæsthesia of the head in a fairly large number of

cases has convinced them not only that spinal anæsthesia is safe but that it is universally applicable.

NATHAN N. CROFT, M.D.

Blomfield J. Shipway Sir F. Young J. Lewis I. N. and Others. Discussion on Avertin Anæsthesia. *Proc. Roy. Soc. Med. Lond.* 1909, vol. 99.

Avertin is tri brom ethyl alcohol a white crystalline substance which dissolves with difficulty in water to 3½ per cent. The strength of the solution must be from 2½ to 3 per cent and the dosage determined according to the body weight. Blomfield uses 0.1 gm per kilogram of body weight. The solution is run into the rectum slowly through a soft tube inserted about 4 in. In Blomfield's opinion it is important for the anæsthetist to be present during the procedure because persons differ greatly in their reaction to avertin. Fairly definite limits of dosage are stated but even within these limits there may be unusual occurrences. In the case of a young man in ordinary health who had an operation for the radical cure of inguinal hernia death resulted and at autopsy no cause for it could be determined. In another case death resulted twelve hours after thyroidectomy.

The induction of the anæsthesia is generally pleasant. There is no excitement or evidence of discomfort. The respiration becomes somewhat depressed. The blood pressure drops from 10 to 12 mm Hg. Often the corneal reflex is absent. According to Blomfield its absence is unreliable. The best test to determine whether or not more anæsthetic is required consists in placing before the face a mark with a strong ether vapor for inhalation. If this vapor is inhaled quietly without holding of the breath the operation can be begun. In about a fourth of Blomfield's cases satisfactory anæsthesia was obtained with avertin alone. The loss of consciousness usually lasts for from two to four hours but is not of that deep variety which would make it dangerous to use avertin in cases in which there may be blood about the air passages. Blomfield regards avertin as a very useful addition to drugs but states that it should not be employed routinely in hospitals. It is most valuable because it gives a very pleasant induction of anæsthesia which is especially good for persons who have had trouble with other anæsthetics and it adds enormously to the safety of operations for exophthalmic goiter and operations on persons who are emaciated.

SHIPWAY says that his impressions regarding avertin are based on only a small number of cases. He believes that if avertin is used with care and in the doses recommended it is a safe and valuable agent for the induction of an anæsthesia which is remarkably free from after effects. He believes it is indicated especially for very nervous patients those who have suffered much from other anæsthetics patients with cardiac and pulmonary complications those with exophthalmic goiter and some of those who must undergo protracted operations. He does not

While many claims are made as to the therapeutic effects of infrared rays most of them are unsubstantiated. However the perceptible effects of these rays are an analgesic action and the relief of local and general congestion. In cases of fatty degeneration of the heart and cases of high blood pressure the application of these rays may be dangerous.

The use of the luminous or visible rays is indicated to increase local circulation to relieve pain to lessen internal congestion to raise body metabolism and to overcome shock.

In Kovács' opinion the chief problem in modern light therapy is the proper evaluation of the wide field of irradiation in the ultraviolet range. The effect of the ultraviolet ray is of two types: (1) a direct local effect on the skin and (2) an indirect effect on the organism. General irradiation has given fairly uniform beneficial results in the following conditions: (1) rickets, tetany and the minor degrees of calcium and phosphorus deficiency; certain forms of malnutrition and anaemia; (2) many forms of surgical tuberculosis; (3) certain forms of chronic pulmonary tuberculosis; and (4) certain forms of general debility. The danger of its use is dependent upon overdosage or improper handling of the apparatus in the cases of persons with a normal response and upon untoward effects in the cases of persons with hypersensitivity to

light and in the large group of conditions which are not suited to light treatment.

In conclusion the author states that he is convinced of the benefit received from light therapy if its application is based on accurate diagnosis, proper dosage and experience in judging beneficial and harmful effects.

GERTRUDE BEARD

Robinson C. A. Diathermy Treatment of Puerperal Septicæmia and Pneumonia. *Proc Roy Soc Med Lond* 1929 xiii 179

Robinson reports twenty-one cases of puerperal septicæmia treated by diathermy with recovery in all except three. He groups these cases according to the manner of the recession of the fever. The treatment was given by means of a vaginal active electrode and a belt dispersive specific heating of the infected organs being thereby accomplished.

In eighty-nine cases of pneumonia diathermy was followed by relief of the pain and a tendency toward rest and sleep. However while the treatment was undoubtedly beneficial the author believes it did not shorten the duration of the illness. The lack of definite results in pneumonia he attributes to the fact that there is no method of heating the infected organ with accuracy as may be done in the treatment of puerperal septicæmia when one electrode is placed within the circle formed by the other.

GERTRUDE BEARD

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Bigler J. A. The Interpretation of Roentgenograms of the Chest in Children Based on Observations at Necropsy. I. The Hilar Shadows and Linear Markings. *Am J Dis Child* 1919 XXXIII 9, 8

The lungs of 17 children coming to autopsy were studied to determine what pathological changes were present to account for the shadows seen in the roentgenograms of the chest. The hilar shadows and the linear markings were found to be due for the most part to the blood in the blood vessels and not to the bronchi. The rounded shadows of even density occurring in the inner third of the lung fields as well as those found along the linear markings were found to have been cast by blood vessels running parallel with the axial ray. Such shadows changed position or disappeared when the target was centered over a slightly different point of the chest. They were in marked contrast to the shadows of calcified lymph nodes which were always present in the same relative location on successive exposures.

On dissection of the lungs with the films before the examiner it was found that normal lymph nodes do not cast shadows. Hyperplastic nodes whether caseated or inflammatory and whether in the hilum or in the intrapulmonary tissue cannot be recognized as such if they do not contain calcium. They will not be seen unless they and the inflammation with evulsion or scarring which surrounds them encroach on the pulmonary fields from the mediastinum or the hilum or unless they are rendered visible by contrast with the air bearing pulmonary parenchyma.

The size and shape of the hilar shadow are influenced not only by active infection but also by the remains of previous infections. This shadow may show wide variations in different roentgenograms and yet be within normal limits for the person examined.

In conclusion the author states that because of the facts reviewed it is important to consider the clinical evidence and history in the interpretation of roentgenograms of the chest. **WILSON BAILEY M.D.**

RADIUM

Canti R. G. The Biological Effects of Radium Irradiation. *Acta radiol* 1919 1: 10

Canti first reviews the earlier observations on the histology of tumors irradiated with the gamma rays of radium. The difficulty in interpreting the results led Strangeways and his co-workers to study the effect of irradiation on tissue cultures. The author describes the cessation and recurrence of cell divi-

sion discusses the hypothesis of the delayed lethal dose and cites an experiment demonstrating the effect of the beta rays on cross seeds.

He then discusses the time intensity ratio. From the results of experiments on tissue cultures it appears that there is both a threshold of intensity and a threshold of time each of which must be passed before a biological effect of irradiation can be obtained. A comparison of the time factors employed in these experiments and by radiologists leads to a discussion of indirect action.

Selectivity of action of the gamma rays on cancer cells is illustrated by cuttings from cinematograph films of tissue cultures of normal and malignant (Jensen's rat sarcoma) cells, and the selective action of beta rays on bacillus coli in an agar culture of streptococci and bacillus coli is shown in a photograph. Reference is made to stimulation and an experiment on tissue cultures is described which showed an increase in cell division which might erroneously be considered the result of stimulation.

Finzi A. S. The Therapeutic Uses of Radium Applied Externally. *Acta radiol* 1919 1: 337

The author reviews the history of the external use of radium since 1903 and records that he was probably the first to use a large quantity of radium at a distance (1011). The method of application are described together with their use in superficial diseases such as epithelioma, rodent ulcer and inflammatory diseases of the skin. The treatment of deep disease by external application is then described with a consideration of the separating material (usually Columbia wax), distance and dosage effects during the application and treatment of the skin.

MISCELLANEOUS

Kovacs R. The Uses and Dangers of Light Therapy. *Med J & Rec* 1919 XXXI 131

The author includes in his discussion the electromagnetic waves of longer and shorter length than those which come under the true definition of light by specifically stimulating the retina of the eye to give the sensation of light. He divides them into (1) infrared or thermal rays (2) luminous or visible rays and (3) ultraviolet or actinic rays.

The varying length of rays generated by the sun and the many different sources of artificial light make accurate dosage impossible. The author believes that a definite terminology is one of the first essentials for the avoidance of error. He says that not until scientific investigations have determined the value of the various bands of radiant energy and a method of separating them will light therapy rest on a definite scientific basis.

fatty substances (camphor paraffin), (2) traumatic fat granulomata (3) fat granulomata in the vicinity of inflammatory foci due to the destruction of adipose tissue by extension of the inflammatory process and (4) spontaneous fat granulomata resulting from spontaneous localized necrosis of fatty tissue from ischaemia or the influence of toxins on the fat cells.

In nine cases of spontaneous fat granuloma some of them of from six to eight years' duration Abrikosoff observed four different types of end result: (1) transformation into a conglomerate tubercle like structure ultimately changing into fibrous tissue (many so-called cutaneous tuberculoids particularly the sarcoid of Darmer and the erythema induratum of Bazin should be placed in this group), (2) transformation into serous cysts, (3) complete conversion into scar tissue and (4) partial petrification with encapsulation of the petrified areas.

BLUMENFELD (2)

Newland Sir H. S., and Woollard H. H. Some Observations on Chordoma and the Notochord. *J. Coll. Surg. Australasia* 1929 ii 157.

The authors report two cases of chordoma reviewing the embryology of the notochord and discuss the histology, growth, position and regional character and symptoms of chordomata.

They believe that the sacrococcygeal chordomata are probably derived from the part of the notochord that extends beyond the coccyx. In the discussion of the etiology of the tumors reference is made to the part played by trauma.

In the differential diagnosis of sacrococcygeal tumors chordomata must be considered. The nearer the cranial cavity a chordoma originates the more rapidly fatal it is. Complete excision seems to offer the best chance for cure.

The authors classify chordomata into three groups corresponding to the different phases in the cytomorphosis of the notochord. Mucin formation is regarded as a normal phase in the development of the notochord and appears to begin in the nucleus.

The authors suggest that further study of the intervertebral disks might throw light on the causation of lumbar pain. *LOUIS P. GAMBLE M.D.*

Behan R. J. The Treatment of Pain in Cancer. *Med. J. & Rec.* 1929 cxxx 614.

The causes of pain in cancer include the accumulation of toxic products in and around the cancer mass, infections and mechanical factors such as pressure. A chief cause of pain is the higher acid content of cancer tissue as compared with normal tissue. Repeated insulin injections appear

to reduce a general acidosis, relieve the pain of cancer, and raise the blood sugar. The pain of cancer is relieved also by the direct use of alkalies superficially and orally. Doubt noted an alkaline reaction in roentgen irradiated tissues.

Restriction of the local blood supply of the cancer may reduce the size of the mass and relieve the pain due to pressure.

Nerve section and block are recommended for selected cases.

The use of narcotics and sedatives is indicated when other measures fail.

CLARENCE V. BATEMAN M.D.

Todd A. T. and Aldwinckle H. M. Colloidal Lead Selenide and Radium in the Treatment of Cancer. *Brit. M. J.* 1929 ii 799.

From the Cancer Research Department of the Bristol Royal Infirmary the authors issue a warning against the use of the X rays or radium subsequent to the treatment of cancer with colloidal lead selenide. In five cases in which a carcinoma had remained stationary or had diminished under treatment with colloidal lead selenide X ray treatment caused prompt and marked stimulation of the growth of the neoplasm. Radium treatment subsequent to the administration of colloidal lead selenide is followed by oedema and necrosis of the tissues around the growth and by sepsis.

In a series of experiments mice were implanted with Thoirs carcinoma. Some of the animals were then not treated at all and others were first given intravenous injections of colloidal lead selenide in amounts less than sufficient to produce a decided result and then radium irradiation of the tumors. With one exception the tumors in the treated animals advanced and were much larger than those in the untreated mice. In a third group of rats which were treated with radium first and then given similar amounts of colloidal lead selenide the tumors all diminished in size with one doubtful exception.

The authors suggest that the selenium of the colloidal lead selenide may increase the sensitivity of the tissues to irradiation. They therefore recommend that the X rays or radium be applied with extreme caution if at all in cases of cancer which have been treated recently with colloidal lead selenide. In cases of cancer which have been treated with radium they allow an interval of from four to six weeks to intervene after the irradiation before starting treatment with colloidal lead selenide, and they give very small doses of the drug if the patient has had any irradiation within three months.

G. W. HAAGENSEN M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Curtin V T and Kotzen H F. Progeria. A Review of the Literature with the Report of a Case. *Am J Dis Child* 19 9 221:11 1933

The term progeria (prematurely old) was first used by Gilford to describe an unusual morbid condition in which senility and infantism are combined. In their general appearance Gilford's three patients suggested either a child five years of age or a wizened dwarfish old man. Their height even after puberty was that of a child six years old. The skull was large, the fontanelles were incompletely closed and the face was small. The hair on the scalp was so downy and sparse that at a distance the patient appeared quite bald. The eyes were large and protruding and there was almost complete absence of brows and lashes. The nasal cartilages were prominent and the teeth few and irregular. The lower maxilla, the clavicles and the scapulae were small. The chest was narrow and the mammary glands were atrophied. The abdomen was distended and the skin tense with obliteration of the umbilicus. The extremities were thin with enlargements at the epiphyses. The enlargements were most marked at the elbows and knees. The interphalangeal joints were also enlarged and the nails were atrophied. The skin was wrinkled and flabby and presented a brownish pigmentation.

Examination of the organs revealed interesting similarities. All of the patients had cardiac murmurs and thickened and tortuous arteries. They were easily fatigued. Two of them gave a history of severe cardiac pain with radiation down the arms and attacks of oppression. All had digestive disturbances, anorexia and a dislike of fats. Their intelligence was above the average.

The subsequent courses of two of the three patients were almost identical. They aged rapidly, became depressed and were fatigued easily. One died at the age of seventeen years in a syncopeal attack after complaining of pain and oppression in the chest, and the other died at the age of eighteen years following an attack of anginal pain. Both presented marked evidence of senile deterioration.

The author's case was similar. The patient had a stroke of apoplexy and died following severe attacks of pain in the region of the heart.

HOWARD A. McKNIGHT, M.D.

Griffith J P C. Mikulicz's Disease and the Mikulicz Syndrome. *Am J M Sc* 1929 clixviii, 853.

The disease described by Mikulicz is characterized by chronic symmetrical enlargement of the

lacrimal and salivary glands beginning in the lacrimal glands. The swelling is hard, painless and apparently non-inflammatory. There is no disturbance of the lacrimal or salivary secretions or of the general health. The lymphatic glands are not involved and there is no change in the blood.

In addition to Mikulicz disease proper there are other conditions which closely resemble it fall in the classification of the Mikulicz syndrome and are usually secondary to some form of leukemia.

Most of the cases reported were those of adults. The etiology of the condition is obscure but studies have indicated a possible relationship to tuberculosis and syphilis.

Examination of tissue from the salivary glands has shown an extensive deposit of small round cells and in many instances typical tubercles with giant cells but without caseation. However the tubercle bacillus has not been isolated directly nor after inoculation of animals.

Various forms of treatment have been carried out including X-ray irradiation and anti-syphilis measures but without beneficial effect. The prognosis of Mikulicz disease proper is uncertain but not entirely unfavorable since in some instances recovery has occurred spontaneously. In many cases the enlarged lacrimal glands have been excised.

Griffith reports a case of Mikulicz disease and a case of leukemia presenting the Mikulicz syndrome. Both of the patients were children.

The article includes also a review of the literature and a discussion of reported cases, pathological studies and the results of treatment. Griffith concludes that while tuberculosis may be a cause of Mikulicz disease it is rarely responsible for it and that even a histological appearance in the glands which strongly suggests tuberculosis is not positive proof that tuberculosis is present.

VERNE G. BURDEN, M.D.

Abrikossoff A. The Fate of the Spontaneously Developing Fat Granuloma—Lipophage Granuloma (Ueber das Schicksal der spontan auftretenden Fettgranulome—Lipophagen Granulome). *Zentralblatt f. allg. Path. u. path. Anat.* 1929 xl 1 57 3.

The fat granulomata following recurrent and intermittent fevers which were described by the author in 1926 are reactive formations of a resorptive nature. They may develop in cases of focal necrosis of adipose tissue as a result of the foreign body reaction of the fat which has been set free in the tissues and has undergone saponification. Since his first report the author has observed fat granulomata resulting from other causes. He distinguishes according to the etiology four forms: (1) artificial or injection granulomata resulting from the injection of oily or

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INTERNATIONAL ABSTRACT OF SURGERY

JUNE, 1930

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Rosenthal W. The Pathology and Therapy of the Temporomaxillary Articulation (Pathologie und Therapie des Kiefergelenks) *Fortschr. d. Zahnheilk.* 1929, 1, 175.

The author first reviews the more recent contributions on the pathology and treatment of temporomaxillary ankylosis, hyperostosis of the capitulum of the condyloid process of the lower jaw, chronic and habitual dislocation of the jaw, fracture of the condyloid process, and contractures of the jaw, especially cicatricial contractures.

In the operative formation of a new joint, Rosenthal chooses the site of the old joint. He shapes up the condyloid process, hollows out a new socket and interposes soft parts as a substitute for the interarticular disk, producing as nearly as possible the normal conditions so that even the unused chewing muscles regain their previous function. When the new joint is formed nearer the angle of the jaw or on the horizontal ramus, the chewing movements are not normal and the bite is much weaker. Therefore it should be formed in the bend of the jaw, only when cicatricial contracture or a previous suppuration in the region of the original joint renders operative interference at that site too hazardous. Up to the present time the author has preferred the incision of Lexer running in front of the ear.

Attention is called to the fact that the results of a successful joint operation may be lost again even after many years.

In lengthening of the body of the mandible with the aid of a bone insert in the horizontal ramus in the region of the chin, the indirect method of free autoplasty recommended years ago by Iavr and Heller and called by Axhausen the temporary transplantation of periosteum covered autogenous bone comes into consideration.

In the case of a boy of five years the author discovered at operation that the cause of locking of the jaw which had persisted since the patient's first

year of life in spite of a normal joint cavity and in spite of resection of the coronoid process was a localized ossification at the point of origin of the masseter muscle. After removal of this ossification the ability to open the mouth was permanently restored. Circumscribed myositis ossificans has been discovered also by roentgen examination.

Hypertrophy of the capitulum of the condyloid process is merely a benign hyperostosis.

The author reports his observations in a case of habitual dislocation of the jaw in which the lower jaw became hooked over the upper jaw in an oblique position. He believes that in most cases of habitual dislocation an attempt should be made first to prevent dislocation by non-operative measures such as the use of a guiding splint, fixation of the jaws to one another by means of rubber bands supplemented by repeated injections of a few drops of tincture of iodine into the joint capsule to cause shrinkage, strengthening of the chewing muscles by massage and electricity and measures to overcome the anemia and general bodily weakness. The operative measures include the excision of wedge shaped segment from the relaxed joint capsule followed by a tucking suture according to the method of Perthes and Ritter, fixation of the interarticular disk on the periosteum of the rim of the joint socket according to the method of Hoeber and Konietzky, and the formation of a guy band outside the joint from the fascia of the temporal region according to the method of Nuden.

In cases of fracture of the condyloid process the Bergstrom mandibular support may be found of value.

Reflex contracture of the jaw may be induced by pressure irritation of the mandibular nerve.

In conclusion the author reports his experience in a case in which the removal of a cancer of the cheek with plastic repair of the defect was followed by recurrence of the neoplasm and cicatricial contracture of the jaw. The recurrence was excised and the resulting gap filled by means of a flap obtained

EDITOR'S COMMENT

BLOODGOOD'S comprehensive discussion of lesions of the breast and their surgical treatment (p. 504) is prefaced by the statement that whereas in former years 80 per cent of patients who presented themselves with breast lesions had already developed malignant growths in recent years the percentage had decreased to 17 per cent, and that in 65 per cent of the cases without malignant disease operation was not indicated. Such a radical change in conditions is undoubtedly the result of the intensive campaign that has been carried on in recent years to awaken public interest in the importance of early diagnosis of malignant disease—a campaign in which Dr. Bloodgood has taken an active and important part. One would be unduly optimistic however, to conclude that a similar change had occurred throughout the country as a whole. In our large charitable and semi-charitable institutions, particularly, whose clientele represents so large a proportion of our metropolitan population the percentage of patients with breast lesions presenting themselves for treatment for the first time with a malignant growth already well developed is tragically high. For that reason one feels that too much stress cannot be placed upon the diagnostic criteria of early malignancy. Bloodgood emphasizes this fact by calling particular attention to the condition which is most likely to be mistakenly considered a benign lesion—chronic cystic mastitis. He states that there are only 2 types of mastitis in which delaying operation is justifiable—the mastitis of pregnancy or lactation with fever, leucocytosis and clinical signs of inflammation, and the typical shotty breast in which the breasts are rarely large and never of the fatty type, and the involvement is usually bilateral. He believes that the type of cancer which produces an area of induration like that of a caked breast is particularly likely to be overlooked or incorrectly diagnosed until extensive and wide spread disease has developed.

Pfahler and Parry's report of the results of roentgen therapy of cancer of the breast (p. 506) is of particular interest in connection with Bloodgood's paper. They recommend as routine treatment for operable cases pre-operative irradiation with from 80 to 90 per cent of the erythema dose during a period of two weeks, followed by operation three days after the last irradiation. Post-

operative irradiation is begun 17 from ten to fourteen days after operation with a series of 12 treatments and the series is usually repeated after from four to six weeks.

Of 51 patients with an early operable cancer, who were given postoperative treatment, 96 per cent were free from symptoms at the end of three years and 89 per cent at the end of five years. Of 99 patients with glandular involvement at the time of operation 63 per cent were free from symptoms after three years and 47 per cent after five years. Of 404 patients with recurrent carcinoma treated by irradiation, 18 per cent were living after five years. Of 156 patients with primary inoperable carcinoma 26 per cent were living after five years or more. The authors conclude that operation should be supplemented in all cases by irradiation.

An unusually interesting group of cases of intestinal obstruction due to biliary calculi, presented recently before the Societe Nationale de Chirurgie is reviewed in this month's issue of the ABSTRACT (pp. 513 and 515). The seriousness of this condition is evidenced by the fact that of 3 cases reported in detail by 3 different surgeons, 1 were fatal. In 1 case death occurred from peritonitis on the tenth day. Autopsy revealed a perforation both of the gall bladder and the duodenal bulb. In a second case the patient made an excellent recovery and left the hospital on the twenty-second day. On the thirty-fifth day she returned with an acute hemorrhagic pancreatitis and died a few hours after operation. In a third case in which death occurred on the second day after operation autopsy disclosed a hemorrhage into the sheath of the right rectus, a nailed-off perforation of the gall bladder into the duodenum, and when the duodenum was opened a second perforation through which a stone was beginning to enter the duodenum.

The importance of remembering the possibility of double obstruction of a second stone making its way from the gall bladder into the duodenum and of an impending perforation of gall bladder or duodenum or both is emphasized by these reports.

This figure of 18 per cent was based on 156 patients with early operable cancer of the breast treated with roentgen therapy. The author of this paper had had 12 patients who were living at the end of five years.

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from the neck. A permanent cure even as regards the function of opening the mouth was obtained.

GEORGE SCHMIDT (Z)

EYE

Duke Elder W S. The Clinical Application of the Newer Conceptions in the Physiology of the Eye. *Lancet* 1930 ccxviii 4

The authors discuss the chemistry of the various tissues of the eye under normal and abnormal conditions and concludes that many pathological phenomena may be rationally explained on the basis of physiological chemistry. SAMUEL A. DICKER M.D.

Stafford H B. Some Observations on the Causes and Treatment of Simple Detachment of the Retina. *Brit J Ophth* 1930 xiv 1

The author reviews 100 cases of detachment of the retina reported from various sources. According to the mechanical theory the detachment is the result of increased pressure behind the retina decreased pressure in the vitreous or the contraction of adhesions between the retina and the vitreous. According to the diffusion theory the retina acts like the animal membrane of a dialyser separating two physiological fluids which under pathological conditions have different tensions so that the fluid from the vitreous passes through the retina. According to the cause, detachments of the retina may be grouped as follows: (1) the traumatic (2) those due to progressive myopia (3) the inflammatory (4) the congenital (5) the parasitic and (6) the idiopathic.

Stafford discusses the treatment from all angles and describes many operations. The most successful operative treatment consists of multiple scleral punctures with a cataract knife followed by the subconjunctival injection of 1:1,000 mercury cyanide followed by weekly injections of hypertonic salt solution under the conjunctiva at the site of the detachment. SAMUEL A. DICKER M.D.

Swift C W. The Transverse Sinus and Its Relation to Choked Disk. *Arch Ophth* 1930 iii 47

Many theories have been advanced to explain choked disk. The author is inclined to accept the mechanical theory. The general cerebral circulation depends on a free circulation within the transverse and sigmoid sinuses while the orbital circulation depends on a free cavernous and petrosal flow. The two join partly at the sigmoid and totally in the jugular bulb. A normal and symmetrical venous system is so adaptable that compensation occurs easily when one side is partially or temporarily blocked. It is the asymmetrical embryonic malformations of the sinuses which contribute to imbalance of circulation. As constancy of the cavernous and petrosal sinuses is clearly established, choked disk in lesions of the cerebral fossa denotes variations in the transverse sigmoid and jugular bulb. GEORGE R. McALPIN M.D.

EAR

Hallpike C S. Some Observations on Bone Conduction. *J Laryngol & Otol* 1930 xlv 1

Bone conduction tests were carried out in a series of cases of conduction deafness. The cases are divided into the following four groups: Group 1 those in which a radical mastoid operation had been done; Group 2 those of chronic suppurative otitis media and its sequelae; Group 3 those of otosclerosis; and Group 4 those of chronic catarrhal otitis media.

Comparisons were made of the results obtained in an ordinary room with the results obtained in the silence room. The findings appeared to show very definitely that in the silence room the increased bone conduction found by the ordinary Schwabach test in such cases undergoes a constant reduction to within normal limits. Similar results were obtained by the use of the absolute bone-conduction test. Cases in which the ordinary Schwabach test is about normal showed a marked loss in the silence room and with the absolute bone conduction test.

It is thought that in these cases there is a true loss of cochlear sensitivity which under the ordinary circumstances of the Schwabach test, is latent. The importance of the absolute bone conduction test in revealing the loss is therefore evident.

It is suggested that latent cochlear loss in the early stages of chronic middle ear deafness is the most important guide to the prognosis and treatment. JAMES C. BRASWELL M.D.

Helsloerter J Jr and Nyssen R. Experimental Studies of Sensibility to Pain Associated with Auditory Stimulation (*Recherches expérimentales sur la sensibilité à la douleur accompagnant les excitations auditives*). *Arch internat de l'otologie* 1929 xxiv 1045

The authors report experiments which showed that the pain caused by an auditory stimulus ceases in a few seconds but the time varies in different persons. When a similar stimulus is applied at regular intervals the duration of the pain decreases progressively with successive applications in all subjects and ultimately pain may cease to occur. The decrease occurs rapidly at first and then more slowly. If when the pain has stopped after a series of applications of the stimulus on one side the same stimulus is applied on the other side increased sensitivity is manifested by greater intensity of the pain longer duration of the pain after the first three or four applications of the stimulus and recurrence of the pain after a greater number of applications of the stimulus. ANDREW C. MORGAN M.D.

Weber M. Otosclerosis in Its Histogenic Relations to Osteodystrophia Fibrosa (Osteitis Fibrosa). *Arch Otolaryngol* 1930 xi 1

Otosclerosis and osteodystrophia fibrosa represent degenerative reactive reparative processes. Presumably through the action of the blood vessels a dystrophy causes degeneration of the bone, thus

leading to irritation of the bone forming system. The irritation manifests itself in resorption and the appearance of young mesenchymal tissue which is the fundamental stage of bone formation. Regressive changes lead to numerous maldifferentiations resulting in the pseudo tumors known as hamartoplasias or brown tumors. Only the cases showing focal involvement of the labyrinthine capsule with ankylosis of the stapes should be designated as cases of true otosclerosis. When found in conjunction with a generalized osteodystrophia fibrosa seen in Paget's disease and von Recklinghausen's disease an osteodystrophia is a part of that generalized dystrophy. **GEORGE R. McALIFF, M.D.**

Jones M. F. and Gerstly, J. M. Ear Infections in Babies. *N. York State J. M.* 1930 xix 1

According to anatomists the mastoid cells develop about the time of puberty, but according to clinical experience these cells are to be found much earlier. The treatment of infection therefore varies with the age of the child. For purulent otitis developing before the age of four and one half years the authors advocate early myringotomy alcohol swabbing or boric acid irrigations. In the cases of children under one and a half years of age the operative procedure should be anthrotomy performed under local anesthesia. Later in childhood a mastoidectomy must be done when indicated as after four and one half years the child's mastoid resembles the adult mastoid. Early operative work will decrease latent mastoiditis intracranial complications and deafness.

Of a total of 252 surgical cases the authors found that the largest percentage occurred within the first two years of life and that in 83.5 per cent of these the infecting organism was the hemolytic streptococcus.

GEORGE R. McALIFF, M.D.

Mangabeira Albemaz P. A Large Pneumatic Cell in the Petrous Portion of the Temporal Bone. A Contribution on the Pathogenesis of Gradenigo's Syndrome (Grande cellule pneumatique du rocher. Contribution à la pathogénie du syndrome de Gradenigo). *Arch. internat. de laryngol.* 1929 xxxv 1035

According to one theory Gradenigo's syndrome is brought about by an infection of the tympanic cavity transmitted to the apex of the pyramid through cells in the bone. The author reviews the work that has been done on the development of pneumatic cavities in the tip of the petrous portion of the temporal bone and describes a pneumatic cell which occupied almost two thirds of the bone.

He states that while it might seem impossible theoretically for cells in the petrous bone to be one of the chief causes of Gradenigo's syndrome clinical examination proves the contrary. Sears found diseased cells at the tip of the petrous bone in six of thirteen cases of paralysis of the external oculomotor nerve following otitis which he studied at autopsy, and in cases reported by Ulrich and Schlaender the

cause of the condition was proved to be an apical abscess. Recently the tip of the petrous bone has been studied by roentgenography. According to Magnien Gradenigo's syndrome is the result of a rarefying osteitis.

It is evident therefore that the cellular route is important but in some cases the condition develops so rapidly that the infection must be transmitted more directly. However when the cells are very highly developed as in the case reported by the author the infection may reach the tip of the pyramid by way of the cells as rapidly as by way of the veins.

ALDREY G. MORGAN, M.D.

Mollison W. M. A Brief Survey of the History of the Mastoid Operation. *Proc. Roy. Soc. Med., Lond.* 1930 xxiii 381

Brown L. C. The Triumphs and Failures of the Mastoid Operation. *Proc. Roy. Soc. Med., Lond.* 1930 xxiii 385

Stewart J. P. and Fraser J. S. The Radical Mastoid Operation. *Proc. Roy. Soc. Med., Lond.* 1930 xxiii 390

Watson D. A New Operation for Closure of a Postoperative Mastoid Fistula. *Proc. Roy. Soc. Med., Lond.* 1930 xxiii 397

Mill W. A. Three Cases of Conservative Mastoid Operation with a Temporal Muscle Graft. *Proc. Roy. Soc. Med., Lond.* 1930 xxiii 401

MOLLISON states that the first reference in the literature to surgical opening of the mastoid was made in 1649, but it is probable that the mastoid was operated upon as early as 1524. Operation was done first for the relief of tinnitus. It was not performed for the evacuation of pus until 1740 (Leist). In 1861 von Treitsch published a work on surgery of the mastoid but credit for the mastoid operation is given to Schwartz (1873). Wilde, Toyne, Hinton, and others modified the technique. In 1889 Stacke and Jensen evolved the radical mastoid operation which superseded trephination. In 1897, conservation with preservation of the middle ear and ossicles (simple mastoidectomy) was advocated for acute cases. In 1904 Heath urged conservatism. In 1911 Stacke in an article entitled 'Conservative Radical Operations' described the most recent form of the operation at that time. Since 1904, the technique and indications have been further changed. The radical operation is now done only for chronic mastoid disease with suspected cerebral complications and cholesteatoma. In 1926 Fraser stated that even cholesteatoma is not a positive indication.

Brown emphasized that the aims of the aural surgeon should be (1) to eradicate the pathological condition (2) to obtain complete and relatively rapid healing of the wound and (3) to preserve, as far as possible, the physiological function of the organ of hearing. In acute mastoid disease the simple mastoid operation performed early and followed by careful after treatment is all that is necessary to insure a good result. Surgery on the canal is contra-indicated except when there is a marked edema of the canal. In chronic mastoid disease the choice of oper-

from the neck. A permanent cure even as regards the function of opening the mouth was obtained.

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MOUTH

Thibault and Raison Septicæmias of Buccoden-
tal Origin (Les septicæmies d'origine bucco-dentaire)
Press. méd. Par. 1929 xxxvii 1528

According to the modern conception of septicæmia a series of microbic or toxic discharges occur from a focus of infection into the blood stream with resulting visceral metastases (pyæmia) or without visceral metastases (septicæmia). The septicæmias of buccal origin are of two types the acute and the chronic. In the acute forms the invading organism is usually the streptococcus or staphylococcus. The authors are in favor of immediate extirpation in most cases of this type but recognize that the time of intervention must often be determined by the local conditions.

The theory that chronic dental infection may be a cause of distant lesions in various organs is of American origin and based on the studies of Rose now and Billings. It is generally regarded as correct.

In the discussion of this report WEIT stated that the distant manifestations are often allergic because the recovery that follows the suppression of the focus is frequently more sudden than it would be if the organ were directly invaded by the streptococcus.

ALBERT F. DE GROU, M.D.

Birkett G. E. Radium Treatment of Buccal Carcinoma. *Brit. J. Surg.* 1930 xvi 495

In the treatment of malignant disease in any site the primary growth the immediate lymphatic drain age area and distant metastases must be taken into consideration. Radium therapy cannot deal with metastases. The treatment of the primary growth in buccal carcinoma is on a satisfactory basis but the problem of the treatment of the lymphatic drainage area is by no means solved. It is believed that the primary growth and the gland bearing area should be treated as separate entities and that the primary growth should be treated first.

In the Manchester and District Radium Institute the diagnosis is made almost invariably from the clinical picture. Biopsy is regarded as inadvisable.

Lesions occurring in different areas of the mouth vary in their histological character. While all of them respond to radium the most brilliant results from radium therapy are often obtained in advanced carcinoma at the base of the tongue.

The radium treatment of the primary tumor has undergone a gradual evolution but is now more or less standardized whether the element or emanation is used.

With regard to the advantages of the use of needles as compared with removable radon seeds there is a difference of opinion. As the external diameter of both needles and seeds is reduced to the minimum the trauma from insertion is negligible. Seeds however have a relatively short active length (usually 0.3 mm) whereas needles vary in length from 10 to 30 mm.

The author uses a minimal filtration of 0.5 mm and a maximal filtration of 0.6 mm of platinum.

The dose is determined by the nature and extent of the growth.

The needles are inserted under general anesthesia induced preferably by the intratracheal method.

The author does not remove septic teeth before beginning the treatment unless they are sharp and carious and have been the chief factor in the development of a growth in the middle third of the tongue.

The needles are joined by stout silk thread before their insertion and the silk thread is fixed to the soft tissues with catgut.

Birkett has not come to any definite decision with regard to the use of the element or emanation but has gained the impression that treatment with the element has been followed more frequently by necrosis.

The technique used by the author in various sites of the buccal cavity is described. In the treatment of the hard palate and alveoli plates made of vulcanite are used the units of irradiation being placed in a box.

Protection of bony structures and soft tissues adjacent to the lesion by lead plates is regarded as unnecessary.

By about the tenth day after the treatment quite an appreciable change in the lesion will be apparent. If the lesion was a projecting tumor it will be considerably flattened and for a variable distance around it from 1 to 2 cm of the normal mucosa will be covered by an adherent greenish yellow fibrous deposit. In cases of nodular lesions the treated area resembles an infarct and the line of demarcation between the reaction zone and the surrounding mucous membrane is very sharply defined. Induration disappears within three or four weeks. If the response is perfect little or no trace of the lesion will be left after from six to eight weeks. Over treatment may lead to radium necrosis. This may not appear until some time after the irradiation.

The treatment recommended for the lymphatic area is as follows:

1. Cases without palpable glands. If the lesion is unilateral block dissection is favored. When the lesion is bilateral the most conservative procedure is irradiation of both sides of the neck by multiple foci.

2. Cases with palpable but mobile glands. Block dissection should be done even when the condition is bilateral. In bilateral cases there should be an interval of two or three weeks between the operations. The dissection should be followed after ten days by prolonged external irradiation.

3. Cases with fixed glands. In the Manchester and District Radium Institute the treatment in cases of this type which are not too far advanced has been along the same lines as the treatment of the primary growth by implantation. If surgery is decided upon a block dissection should be done and followed by the implantation of radium needles or external irradiation with the use of a collar.

active procedure is directly influenced by the degree of hearing retained. For the preservation of hearing preservation of mobility of the round and oval windows is essential. The modified radical operation with preservation of as much as possible of the tympanic membrane and middle ear contents is indicated. When the patient retains no useful hearing the complete radical mastoid operation may be undertaken. Poor results of operation are increased deafness with or without an aural discharge fistulae unsightly scars facial paralysis and intracranial complications. The last two are due to faulty technique. Thorough eradication of all foci of infection in the mastoid and proper after care are essential.

STEWART and FRASER emphasize that acute ear conditions should be prevented from becoming chronic. Scarlet fever and measles are responsible for over half of the cases of mastoid involvement. Aural polyp with symptoms are responsible for a third of the operations on the mastoid. Polyps tend to recur after removal. In most of the cases the mastoids are cellular. Chronic mastoid conditions with pain should be operated upon. The incus is more liable to disease than the malleus. Eichenondritis seldom occurs after operation. The most dangerous postoperative complications are labyrinthitis and the resulting meningitis. When they occur the labyrinth should be drained. Skin grafting decreases the pain and the length of time the patient is obliged to remain in the hospital. Patency of the eustachian tube and failure to keep up postoperative care are responsible for most of the failures of operation.

In the operation described by WATSON an incision is made down to the bone an inch or so posterior to the auricular attachment. A large flap is dissected up with a tonsil elevator to the fistula special care being taken where the flap is adherent to the dura. The tip of the fistula is grasped and cut free from the posterior meatal wall and a Kormer flap is cut and sutured to the anterior lip of the fistula by a Mathews suture. The fistula is then inverted and the raw surfaces are sutured. Any work necessary on the mastoid cavity is then done. The cavity is packed with iodoform gauze wrung out in 1:500 acriflavine and the original incision is sutured.

MILL reports three cases in which after a Schwartz operation the incus was exposed by removing the outer wall of the aditus and was then removed. The bridge was left intact. The cavity was then cleaned with hydrogen peroxide and alcohol and filled with a temporal muscle flap cut as described by Kirch. After suture of the wound a tight bandage was applied. The results as regard dryness of the ear and hearing were good. MANSFORD R. WALTZ, M.D.

NOSE AND SINUSES

Rouget and Ferrand. Ethmoiditis in the Child (L'ethmoidite chez l'enfant). Arch. internat. de laryngol. 1929 XXXI 999.

Whereas in the adult infection of the ethmoid sinus is usually associated with lesions of the frontal

and sphenoidal sinuses in the child it is most often isolated because the two other sinuses do not develop until later. The predisposing causes are the same as those of otitis. Rhinopharyngeal infections play an important rôle especially in children with adenoids. Measles diphtheria, and particularly scarlet fever are frequently complicated by a form of ethmoiditis which is accompanied by suppuration at the onset. In the authors' experience the bacteria most commonly responsible for the infection were staphylococci and streptococci and staphylococci were discovered four times as frequently as streptococci.

The clinical aspect of the condition is that of periorbital cellulitis with minimal rhinological signs. Following coryza or in the course of some other infectious disease swelling occurs in the internal angle of the eye and both lid. If the swelling is very marked the eyeball may be pushed downward forward or back. Some degree of diplopia usually ensues. Sometimes slight collateral circulation develops. The internal wall of the orbit presents a painful point but the conjunctiva is normal. Movements of the eyeball are unaffected except for slight limitation in the upward and inward direction caused mechanically by the swelling. Slight anesthesia of the cornea is found at times but the eyebounds are always normal.

In the roentgen picture front view the ethmoid shows a loss of transparency while the frontal and sphenoidal sinuses if visible on the plate are clear. With the use of Hirtz's position it is possible to judge the extent of the lesion.

The disease may run one of two courses a course with congestion which clears up rapidly under medical treatment or a course with suppuration. In the latter which is particularly frequent in scarlet fever the swelling increases the temperature remains high and the child is unable to sleep. Inability to sleep is a valuable sign in determining the necessity for operation. The course may be characterized by successive remissions and exacerbations. In one of the authors' cases several attacks of the congestive variety were followed after an interval of months by an attack with suppuration.

As the infection is isolated the prognosis is excellent in the congestive forms and in general is good in the suppurative forms. However in streptococcus infections and in cases which complicate scarlet fever phlegmon of the orbit and meningitis are possibilities.

In the congestive form the treatment should consist in the application of moist hot dressings disinfection of the nose and the use of vaccines. In the suppurative forms surgery is necessary. Access should be obtained by the orbital route. The ethmoid must be carefully cleaned out with the blade of the curette directed downward and inward away from the dura and the eyeball. A few treatments with the ultraviolet rays after the operation will be found to give good results.

FLORENCE A. CARPENTER.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Stricker P. and Grueter F. Experimental Studies of the Function of the Anterior Lobe of the Hypophysis. The Influence of Extracts of the Anterior Lobe on the Genital Organs of the Rabbit and the Establishment of Lactation (*Recherches experimentales sur les fonctions du lobe antérieur de l'hypophyse. Influence des extraits du lobe antérieur sur l'appareil génital de la lapine et sur la montée lactée*) *Presse méd. Par.* 1929 *xxvii* 1263

Numerous functions have been ascribed to the anterior lobe of the pituitary body but one of the most remarkable is its influence on the genital organs. To Evans and his students belongs the credit of having drawn attention to this phenomenon first. Evans demonstrated that the administration of an extract of the anterior lobe causes the appearance of corpora lutea in adolescent rats. Smith a pupil of his found that, by the daily intramuscular transplantation of fragments of the anterior lobe of the hypophysis it was possible to provoke sexual maturity in young female rats. Excision of the hypophysis before puberty retarded or suppressed the development of the genital organs. In the male the effects were less noticeable. Zondek and Ascheim confirmed these findings. They regard the anterior lobe of the hypophysis as an activator of the ovarian function. The hormone of this lobe is found in the urine of pregnant women together with the follicular hormone.

The authors conducted their experiments principally on the rabbit, an animal in which the ova do not mature and corpora lutea do not develop until after copulation. Extracts of the whole gland were employed. The purified extracts seemed to act only on the ovaries and not on the function of the mammary glands.

When a young rabbit received two injections of an extract corresponding to 0.5 gm. of the gland given at intervals ranging from twenty four to forty eight hours marked hyperæmia and enlargement of the ovaries with swelling of the follicles and at times the formation of corpora lutea were observed. These changes occurred in four or five days. After a series of from six to twelve injections the ovaries sometimes resembled a bunch of grapes because of the development of numerous large graafian follicles and corpora lutea. The ovarian changes were accompanied by hyperæmia and hypertrophy of the uterus and tubes.

Rupture of the follicles in an adult rabbit in rut could be produced by a single injection of the extract.

In the adult castrated rabbit the extract caused hyperæmia of the tubes and uterus but the mucosa

did not undergo the changes preparatory to implantation of the ovum.

No effects were noted in the breasts of young rabbits doubtless because the hypertrophy is dependent on the development of the corpus luteum but when the extract was administered to adult rabbits in rut and after copulation with a sterilized male (vas ligated) milk appeared from two to four days after the beginning of the injections.

To determine whether the lactic secretion was dependent on the ovarian activity rabbits were castrated ten days after a sterile coitus and then treated with the extract. The secretion of milk appeared as before even after a delay of from three weeks to three months. In the latter instance the breasts had involuted. In the rabbit and dog the secretion of milk may be re-established fifteen days after weaning of the young. ALBERT F. DE GROOT, M.D.

Leopold S. S. Spontaneous Subarachnoid Hæmorrhage. *Med. Clin.* 4m 1930 *xiii* 869

Subarachnoid hæmorrhage may occur as the result of an inflammatory process such as syphilitic tuberculous or meningococcal meningitis as the result of a deficiency in factors concerned in blood coagulation, such as occurs in hæmophilia, purpura, and leukæmia and as the result of trauma.

Spontaneous subarachnoid hæmorrhage is due to arterial aneurisms and arterial disease of non-bacterial origin. Its early age incidence is strong evidence against arteriosclerosis as a cause. According to the literature intracranial aneurisms in young persons are not uncommon and are hardly ever due to syphilis.

It has been assumed that hæmorrhage may occur from a functional vasomotor disturbance of the vessels in the subarachnoid region analogous to that which is supposed to occur in Raynaud's disease and certain cases of migraine.

The symptoms and physical findings resulting from the sudden extravasation of blood into a serous cavity are those of meningeal irritation and may be indistinguishable from those of meningismus or meningitis accompanied by moderate fever. Small hæmorrhages produce a slight increase in the intracranial pressure resulting in headache, vertigo and vomiting and occasionally a brief loss of consciousness. When the hæmorrhage is large, coma and rapid death may ensue. Frequently the onset is preceded by a snapping sensation referred to some part of the head.

The diagnosis of spontaneous subarachnoid hæmorrhage is made by excluding all of the well recognized causes of intracranial hæmorrhage such as trauma the rupture of an intracranial cyst tumor acute and chronic meningitis malignant and sub

At the present time treatment of the lymphatic drainage area with radium alone is not satisfactory largely because of the fact that the supply of radium is limited.

There are no figures for five year end results in England, but Continental workers report a five year cure in 45 per cent of cases as regards the primary site and absolute cure in 20 per cent.

LATRECE CURTIS M.D.

NECK

Lahey F H Primary Hyperthyroidism In Children *Surg Clin N Am* 1929 ix 1327

Primary hyperthyroidism or exophthalmic goiter is not rare in children. It occurs as typically in children as in adults. In the child the thyroid gland shows the same moderate enlargement and the same firm consistency and state activation excitability, nervousness, and tremor are as apparent as in the adult. Tachycardia and loss of weight are similarly present to a degree proportionate to the degree of intoxication.

Because of uncertainty as to the degree of reaction in young children Lahey has operated on practically all cases of primary hyperthyroidism in children in two stages performing subtotal hemithyroidectomy first on the right side and about six weeks later on the left side. In most of the cases there was a marked reaction in the rapidity of the pulse but in none was there any general reaction of such a character as to suggest danger of death.

As myxedema is particularly undesirable in children the author has made it a rule to leave slightly larger remnants of thyroid in children than in adults.

SAMUEL KARY M.D.

Palmer W W The Significance of Abnormal Metabolic Features in the Management of Thyrotoxicosis *Ann Int Med* 1930 iii 631

Palmer points out the necessity of considering all of the abnormal metabolic features in the management of thyrotoxicosis. He discusses first the basal metabolism and the effect of iodine therapy. The difficulty of maintaining nitrogen equilibrium is cited. In the more toxic cases a caloric intake of from 75 to 100 per cent above the basal metabolism determined with the patient in bed is necessary to establish nitrogen equilibrium or a positive balance. The chemical evidences of toxicity are important. Sufficient food should be given to produce a gain in weight.

Associated with the disturbance of nitrogen metabolism is the creatin creatinine mechanism. Normally when a creatin free diet is given the urine is free from creatin but in cases of thyrotoxicosis the normal creatinine output decreases and creatin appears in the urine. A low protein high-caloric diet or the administration of iodine will cause the creatin in the urine to decrease or disappear. Whether or not this has any relation to the presence of a phosphorus creatin compound in the muscles is not clear.

The phosphorus calcium balance is also altered but its significance is not clearly understood.

FRANK B BERRY M.D.

MISCELLANEOUS

Collier J Localization of Function in the Nervous System *Brit M J*, 1930 1 55

This article is an exposition of the most recent advances in the localization of function in the nervous system in which the author traces the development of nervous system localization from its idea to Gall up to the present time.

The author's conclusions are as follows:

In the consideration of a faculty of the nervous system it is just to locate the function in the whole of the anatomical substratum connected with it and not in any one part of it. The substratum is a path commencing in the periphery entering the central nervous system and converging with other paths which modify its function at each convergence entering the cortex of the brain and spreading widely with infinite convergences and modifications of function and gathering again thence to return to the periphery. Insofar as this path is compact and single it is vulnerable to local destructions. Inasmuch as it is diffuse or duplicated in another place it is not vulnerable. In the cortex of the brain the paths soon become diffused. Keep away from those regions of the cortex through which the compact single paths to and from the periphery are known to pass and ablations will produce no loss of function for the path is here too widely spread and the function too widely distributed to be influenced by small local loss nor will such terms as annexes association areas or the word psycho prefixed to any word that you may wish satisfy us in the absence of any definite evidence as to the functions of the highest product of evolution—the cerebral cortex.

'The experimental physiologists of today have laid down that the motor cortex is only so called by them because it is more excitable than the rest of the cortex and that even in this region lability of function facilitation and deviation of response are more characteristic features than is localization and that there must be other mechanisms than this pre-central cortex which act directly upon the lower motor mechanism by means of direct descending fibers and that normal motor activation takes place through descending fibers from many parts of the cortex and that in complex motor activity the cerebral cortex acts as a whole though the activity of some parts of it may be accentuated and of other parts depressed and that the activity of any one part of the cortex is conditioned by the balance of innumerable activities which proceed from other parts of the cortex. The physiologists have abandoned the localization of function within the cerebral cortex and this position is in accord with clinical evidence in man.

It is obvious that each region of the cerebral cortex must be of equal functional importance in the makeup of the perfect animal yet it is difficult to give up the belief that those regions of the cortex which immediately border upon the junctions of the cortex with the sensory path the visual path the auditory path and the pyramidal path are more especially connected with the functions these paths subserv. But it must be carefully borne in mind that the evidence in favor of this belief upon the experimental side is solely the facilitation experiments of Graham Brown while upon the clinical side there is no certain evidence whatsoever.

DAVID J IMPASTATO M D

acute infectious endocarditis and diseases of the blood. The spinal fluid is usually under increased pressure and uniformly mixed with blood. In preliminary studies the author was unable to obtain evidence indicating that the van den Bergh test is capable of differentiating between blood due to pre-existing hæmorrhage and that due to accidental contamination.

Recovery may be expected when a small hæmorrhage results from sunstroke or some vasomotor disturbance and when the increased intracranial pressure is relieved by spinal puncture. In cases of hæmorrhage occurring in youth presumably as the result of congenital weakness of the arterial walls or the rupture of small and probably congenital aneurisms recovery is frequent although recurrence is not uncommon. In the cases of old patients with arteriosclerosis the prognosis is extremely poor.

In the diagnosis and treatment of spontaneous subarachnoid hæmorrhage spinal puncture is indispensable. Other methods of reducing intracranial pressure, particularly the intravenous use of hypertonic glucose, may also be of value.

ROBERT ZOLLINGER M.D.

Green F H K. *Military Aneurisms in the Brain*. *J Path & Bacteriol* 1930 xxvii 71

During an examination of the brains of ten arteriosclerotic subjects with high blood pressure three undoubtedly military aneurisms were found. Two of them had ruptured giving rise to small hæmorrhages in the brain substance. The third was completely thrombosed and lay in relation to a zone of ischaemic softening.

The author suggests that military aneurisms arise only where atheroma involves the media of an artery to an extreme degree.

A technique is described for the search for military aneurisms in the brain. DAVID J. LUCASIO M.D.

Towne E B. *The Treatment of Pituitary Tumors*. *Ann Surg* 1930 xci 29

This article is summarized as follows:

1. Eighty per cent of pituitary adenomata are solid and 20 per cent are cystic.

2. Twenty per cent of patients retain useful vision for more than five years after operation. 80 per cent show no improvement or after more or less marked improvement develop a recurrence after about two years.

3. The operative treatment of pituitary adenomata has a mortality ranging from 7 per cent upward. Roentgen treatment has no mortality.

4. Cases are reported which show that long continued favorable results may be obtained from roentgen treatment and that if the result is not good a cystic tumor favorable for surgery may be diagnosed.

5. The custom of following surgery immediately by roentgen ray treatment confuses the issue. The two methods may be used separately without jeopardizing the chance for cure.

6. It is proposed that all pituitary adenomata be treated with the roentgen ray under the observation of the ophthalmologist and the neurosurgeon that the treatment be stopped as soon as improvement begins and that surgery be undertaken short of six months only when visual acuity and fields recede under roentgen ray treatment.

ERIC OLDBERG M.D.

SPINAL CORD AND ITS COVERINGS

Makrycostas K. *The Practical Clinical Significance of Angioma of the Vertebrae* (Ueber die praktische klinische Bedeutung des Wirbelangioms). *Arch f Klin Chir* 1930 cli 663

The author states that in 2534 cadavers in which a search for vertebral angiomas was made by Schmorl such tumors were found in about 12 per cent. In some instances they were multiple.

Vertebral angiomas rarely give rise to definite symptoms. When they do the symptoms are those of transverse myelitis. They produce severe symptoms most frequently in youth. Sometimes they cause death from compression myelitis.

The author reports in detail the findings in a case of angioma of a vertebra which was discovered accidentally at autopsy on the body of a man thirty-one years of age. The tumor involved the entire vertebral body and had encroached onto the intervertebral arches.

Makrycostas believe that the diagnosis can be made during life by roentgen examination especially when the tumor has attained a size sufficient for it to cause noteworthy clinical symptoms and has produced a ballooning out of the body of the vertebra.

Hook (2)

SYMPATHETIC NERVES

Rogers L. and Hemlingway A. *Periarterial Sympathectomy An Experimental Investigation of the Effects of This Operation upon Local Circulation*. *Brit J Surg* 1930 xiii 473

The authors performed periarterial sympathectomy on the femoral or popliteal artery or both vessels in cats and on the common carotid artery in rabbits. The method usually employed was carbolicization. In the experiments on the cats they compared the circulation of the hind leg of the side on which the sympathectomy had been done with the circulation in the hind leg of the normal side by the use of vasodilators such as acetyl choline and histamine. Vasodilatation usually followed the operation but was very transient. In a comparison of heat production on the side operated upon and the normal side very little difference was noted.

In the experiments on rabbits the ear on the side on which the carotid artery was carbolicized showed vasodilatation for about forty-eight hours. Section of the main sympathetic trunk produced a similar but much more marked and prolonged dilatation.

LEO M. DUNN M.D.

are approaching the menopause and are apt to be overweight while those with diffuse papillary cyst adenoma are underweight. Palpation reveals beneath the nipple and areolar zone one or more masses usually of the shape of worms and often no larger than the largest angle worm. The surgeon and pathologist should bear in mind that the gross finding of dilated ducts filled with grumous material is against cancer also that frozen sections may be difficult to interpret because the periductal lymphoid granulation tissue will destroy the basement membrane and basal cells of the duct and the rapidly proliferating epithelial cells of the duct will grow in this granulation tissue and simulate cancer.

Lumpy breast has been described by Warren as a noble-stone breast. It is usually bilateral and is the most common finding in women seeking advice regarding a breast condition. Multiple lipomata may produce a lumpy breast. Senile breasts with irregular distribution of fat and fibrous stroma and lactating breasts with residual areas of lactation hypertrophy are lumpy breasts. Dilated ducts beneath one or both nipples are found only rarely in shotty breasts but frequently in lumpy breasts. In young or women multiple encapsulated adenomata and in older women chronic cystic mastitis may produce multiple definite lumps in one or both breasts. As a rule benign multiple lesions are bilateral and malignant lesions are unilateral. Too many breasts of older women are sacrificed because of multiple blue domed cysts.

Chronic cystic mastitis or caked breast may produce a tumor of the diffuse mastitis type. There is nothing more insidious than the type of cancer that produces an area of induration like that of a caked breast. There are only two types of mastitis in which delay of operation is justifiable—the mastitis of pregnancy or lactation associated with fever and leucocytosis and clinical evidence of inflammation and the typical shotty breast which is bilateral. When the shotty breast presents a diffuse hard zone without the multiple shot like areas exploration should be done. When a mass in the breast of a woman over twenty five years of age suggests mastitis on palpation exploration should not be delayed.

Absent breast tissue in the axilla. Absent breast tissue in the axilla has been the site of cancer in 3 per cent of the cases reviewed by the author but is not an indication for operation unless a definite tumor can be palpated or the mass becomes so large that it is troublesome. The axilla may be the site also of sebaceous and sweat gland nodules.

Unilateral hypertrophy of the breast. After the age of puberty unilateral hypertrophy of the breast usually means some form of encapsulated adenoma. If the mass is larger than a quadrant of the breast, sarcoma is suggested. In the male, diffuse hypertrophy begins in one breast and from three to six months later appears in the other breast. If it is left alone it will disappear again in a few months. Cancer of the breast in the male is insidious. When fully developed clinically it is usually hopeless. Therefore

when a man comes under observation with an enlargement of one breast of a few weeks duration, the whole area should be excised. If the tumor is benign the patient and his physician should be informed that the other breast will enlarge also but should be left alone.

Diffuse areolar hypertrophy. This condition may produce an infiltration beneath the corium of lobules of the breast parenchyma.

Changes in the breast resulting from atrophy after lactation. When the patient with atrophic changes is in the proper position for inspection and palpation of the breast that is reclining on her back with her arms over her head the nipples fall into a depression in the breast like a crater and the areola and skin around the nipple are thrown into wrinkles. This finding is not a sign of cancer. The depression usually disappears when the woman sits up or places her arms at her sides when she is lying down.

Skin lesions of the areola and the skin over the breast. Skin lesions of the breast should be treated in the same way as skin lesions elsewhere. Elevated pigmented moles and warts should be removed. As skin metastasis may be the first evidence of breast cancer all subcutaneous nodules should be removed and sectioned.

In conclusion the author gives a detailed description of the technique of examining the breast.

PAUL W. SWEET, M.D.

Charteris A. A. On the Changes in the Mammary Gland Preceding Carcinoma. *J. Path. & Bacteriol.* 1930 XXXI 101

Charteris made a histological study of forty eight breasts removed by operation on account of carcinoma. Forty one of the breasts were involved also by so called cystic mastitis. In thirty one of the forty eight cases the malignant growth was believed to have arisen from the ducts.

It was found that all grades of epithelial hyperplasia may be present in the ducts and acini. The earlier stages are usually to be seen in association with chronic mastitis. The process may result in the formation of papillomatous growths with a variable amount of stroma or in a more cellular and diffuse growth without stroma. The more purely cellular hyperplasias may be traced through a series of progressive developments in which changes in the character of the cells at last become apparent. No line of demarcation between the various stages can be made out the stages merge insensibly with each other until finally the ducts and acini are filled with cells indistinguishable histologically from cancer cells—intraduct carcinoma. Ultimately these cells break through the duct wall and invade the tissues forming a cancerous tumor.

These observations indicate that the onset of cancer in the breast is frequently the result of a long series of proliferative changes occurring mainly in the duct epithelium and beginning as relatively simple lesions the study of which might give in formation of value in the prophylaxis of cancer.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Bloodgood J C. The Changing Clinical Picture of Lesions of the Breast. *Am J M Sc* 1930 clxxx 27

Bloodgood states that women are now coming for examination for breast conditions earlier than formerly and he emphasizes that it is quite as important for the diagnostician to tell when not to operate as when to operate. According to Bloodgood's earlier records 80 per cent of breast diseases were malignant when the patient came for examination whereas according to his more recent records only 17 per cent were malignant when treatment was first sought and in 65 per cent of the cases of benign conditions operation was not indicated. In former years it was minor diagnosis major surgery and minimal results. Today it is major diagnosis minor surgery and maximal results.

In considering the benign conditions of the breast for which operation is not indicated Bloodgood discusses (1) pain (2) painful scars (3) discharge from the nipple (4) retraction of the nipple (5) lesions of the nipple suggesting Paget's disease (6) the history of a disappearing tumor (7) tumors in women under twenty five years of age (8) tumors in women over twenty five years of age (9) tumors in the axilla aberrant breasts lipomata lymph gland involvements and lesions of the sebaceous and sweat glands (10) unilateral hypertrophy (11) diffuse virginal hypertrophy (12) changes in the breast resulting from atrophy after lactation and (13) skin lesions of the areola and the skin over the breast.

Pain. Pain is a more frequent symptom of the onset of a benign tumor than of the onset of a malignant tumor. This is probably due to the fact that it is more frequent in the breasts of women in the age limits of benign lesions and less frequent in those of women at the cancer age. Pain and tenderness are of no value in the differential diagnosis of breast lesions. The author has never found a malignant tumor of the breast in a woman who sought examination on account of pain only.

Painful scar at the site of an operation. A painful scar is not a sign of recurrence of the disease for which the operation was performed. A scar should never be excised for pain only. If the patient is relieved of the fear of cancer she readily tolerates the pain.

Discharge from the nipple. No matter what the character of such a discharge may be it is not a sign of cancer. The most frequent cause of a discharge from the nipple is a papilloma in a duct. The discharge produced by a papilloma is hemorrhagic or serous. The author's records reveal no case of cancer of the breast developing in a papillomatous cyst.

Retraction of the nipple. Intermittent retraction of the nipple is a sign of chronic cystic mastitis or shotty breast rather than of malignancy but in a case of recent retraction cancer must be suspected whether a lump can be felt or not and the breast should be explored. The nearer a small palpable lump to the nipple the less reliance can be placed on retraction of the nipple as a sign of cancer. However retraction of the nipple should be regarded as suggesting malignancy until cancer is positively ruled out.

Lesions of the nipple suggesting Paget's disease. Unless a positive diagnosis is of Paget's disease is made such lesions should be treated twice a day by cleansing them with soap water and alcohol and then covering the nipple with vaseline and gauze. If this treatment does not heal the irritation the lesions should be excised with the areola and breast tissue beneath and an examination made of frozen sections. If malignancy is found the complete operation should be done.

The history of a disappearing tumor. It has now been established that except in cases of caked breast and lactation mastitis the history of a disappearing tumor is an indication of chronic cystic mastitis.

Tumors in women under twenty five years of age. The chief reasons for the removal of a tumor in or near the breast of a female under twenty years of age are the possibility that an aberrant adenoma may grow rapidly and that an intracanalicular myxoma may become a sarcoma after a certain enlargement has been reached. After the twentieth year all palpable tumors in or near the breast should be removed. Tumors in and about the breasts of children are rare. If they are not directly in the breast it is safer to remove them on account of the danger of sarcoma in the young.

Tumors in women over twenty five years of age. Of the breast conditions occurring after the twenty fifth year of age the author discusses the shotty breast dilated ducts beneath the nipple the lumpy breast and chronic cystic mastitis.

The shotty breast (diffuse papillary cystadenoma) is now considered a distinct clinical entity and a condition in which operation is seldom indicated. Shotty breasts are rarely large and are never of the fatty type. The condition is practically never seen after the menopause. As a rule it is bilateral. It may involve a portion or all of the breast. The parenchyma is distinct and filled with shotty masses. There is a distinct edge like the edge of the liver and the breast may be lifted up like a saucer. This type of breast is not as translucent as the fatty senile breast but contains no dark areas.

Dilated ducts beneath the nipple are found as a rule later in life than the shotty breast. The women

The results paralleled those in the living lung consisting in a shortening and narrowing of the bronchi with deflation, an elongation and possible narrowing with partial inflation and a widening with more extensive inflation.

The author also discusses the nervous mechanism of the bronchi. His statements are based on an analysis of the action potential of the sympathetic and vagus nerves of the turtle.

RALPH B. BETTMAN, M.D.

Overholt R. H., Pendergrass E. F., and Leopold S. S. Postoperative Pulmonary Atelectasis. Report of an Unusual Case. *Surg. Gynec. & Obst.* 1930 1: 45.

In the case reported the most marked displacement of the mediastinal structures toward the affected side and the greatest elevation of the diaphragm occurred at a time when the density of the lung was very little increased and partial return of the mediastinal structures toward their normal position occurred when the density of the middle and lower lobes had reached the maximum.

RALPH B. BETTMAN, M.D.

Martin B. Experimentally Produced Pulmonary Embolism in the Dog. Cinematographically Portrayed (Ueber experimentell erzeugte Lungenembolie bei Hunden durch kinematographische Aufnahmen festgehalten). *Arch. f. klin. Chir.* 19: 9 cl. 377.

In the experiments reported the femoral vein was exposed and then closed proximally by a weak springed forceps and a thrombus was produced in it by the injection of liquor ferri sesquichloridi diluted one half with normal salt solution to which barium sulphate had been added.

The formation of the thrombus required about twenty seconds but before the mass could become adherent to the vessel walls from the action of the chloride of iron the way to the heart was opened by loosening the forceps. The thrombus then became an embolus of the lung. The process required from two to ten seconds and could be easily observed on the roentgen screen.

In the region of the inferior vena cava the embolus proceeded slowly and continuously forward in some instances suffering a backward push with each closure of the tricuspid valve but after it had passed through the diaphragm its motion was accelerated as though it was pulled onward into the right heart. In the right ventricle it was whirled about a few times broken up and then driven like a cloud of fine dust and in the fraction of a second into the branches of the pulmonary artery particularly those in the lower lobes. The upper lobes remained practically free. In two instances the tiny mass was held by the ligamentous strands of the right ventricle in one instance a non-disintegrated straddle embolus was observed and in the case of an animal which survived the embolism a moderate retrograde growth of the mass was seen.

In forty two of the forty five dogs the embolism was fatal. Only four of the animals survived longer than thirty hours. Five died within ten minutes. Of the three which survived two were plainly "embolus sick" with more or less irregular and spasmodic respiration and a fast and irregular pulse.

Diminished respiratory surface in the lung does not account for death from embolism. The chief factor is the cardiac disturbance. The right heart struggles against the unaccustomed resistance and in spite of increased exertions and in spite of the administration of camphor and strophanthin is unable to overcome it.

In the experiments reported the thrombus drew after it the equally roentgen opaque contrast medium which had not yet become hardened into a solid mass and was strung out behind.

With regard to the conditions under which a thrombus becomes an embolus the author states that when there is complete closure of the lumen of the vessel by a thrombus dislodgment of the mass by the blood stream is not to be feared unless a powerful force drives the mass forward as a whole. When the lumen is not completely blocked and the thrombus is only partially adherent to the vessel wall the danger of embolism is present. A floating part of the thrombus is always broken loose when the mass develops forward over the site of anastomosis of the vein with another vein so that it becomes involved in two currents.

In the treatment of pulmonary embolism the heart should be strengthened, venesection should be done to relieve the right heart and the respiration should be stimulated by the administration of carbon dioxide.

MAX BRÜDE (Z)

Singer J. J. and Graham E. A. Clinic Demonstrations. *Arch. Surg.* 1920 xix 1552.

The authors discuss the cooperation between the medical and surgical services which has been the main feature in the development of their chest surgery. They state that in large general hospitals patients in the medical wards are often not given the benefit of possible surgical help because of the lack of such cooperation.

Like many others Singer and Graham have found that even very large abscesses of the lung may be healed in time by merely postural drainage. They believe that as a rule the abscesses which respond readily to bronchoscopy are of the same type as those which heal with pulmonary drainage or respond to collapse therapy. In acute cases they resort to surgery only after five or six weeks and only after postural drainage and pneumothorax have definitely failed. Cautey lobectomy is reserved particularly for multiple chronic abscesses of the lung.

The authors believe that bronchiectasis is becoming less frequent. They state that they have very frequently noted a relationship between this condition and chronic infection of the nasal sinuses and have often found that when the nasal sinuses were cleared up the symptoms diminished.

They indicate also that the development of cancer in the breast is usually associated with certain proliferative changes occurring in the lactiferous ducts and to a lesser extent in the related acini which affect especially the lining epithelium and are almost always accompanied by what is usually described as chronic cystic mastitis.

JOSEPH K. NARAT, M.D.

Pfahler G. E. and Parry L. D. Results of Roentgen Therapy in Carcinoma of the Breast
J. Am. M. Soc. 1935 XLIV 101

This report is based on 939 cases of carcinoma of the breast which were treated at least three years ago.

The end results in cancer of the breast depend upon the type of the cancer, the patient's age and resistance, the extent of metastasis, the stage and rapidity of the growth, the regions invaded, and the length of time the symptoms were present before treatment was begun. The authors have found that grading of the tumor tissue is of little value in the prognosis.

Of the 939 patients whose cases are reviewed 13 per cent were males and 85 per cent were married. The cancer involved the right breast in 46 per cent of the cases, the left breast in 48 per cent and both breasts in 6 per cent. In 56 per cent attention was first attracted to the breast by a lump; in 9 per cent by pain and in 14 per cent by an injury. The youngest patient was sixteen years of age and the oldest eighty-five years. Sixty-four and four tenths per cent of the patients were between thirty and fifty-five years old. The average length of time the symptoms had been present before the patient applied for any kind of treatment was nineteen months.

The authors believe that X-ray treatment should be given within two weeks after operation. They have found that it does not interfere with wound healing. Since 1926 they have been recommending pre-operative as well as postoperative irradiation. For operable cases they advocate preliminary treatment with from 80 to 90 per cent of the erythema dose during a period of two weeks, followed by operation three days after the last irradiation. They give postoperative irradiation within from ten days to two weeks after the operation in order that any carcinoma cells left behind will be destroyed before their blood supply is reestablished. Low voltage rays are used over the mammary region in order to avoid injury to the heart and lung. Over the axilla, the coracoid region and the supraclavicular region, high voltage rays are employed. Twelve treatments are usually given in the first series and the treatment is repeated after an interval of from four to six weeks. In inoperable cases it is necessary to continue the treatment for from two to three months to obtain a certain fibrosis and encapsulation.

Postoperative X-ray treatment was given in 212 of the authors' cases. Of 51 patients with an operable

cancer in the early stages 96 per cent were free from symptoms at the end of three years and 89 per cent were free from symptoms at the end of five years. Of 99 patients who came for treatment in a late operable condition with involvement of gland 63 per cent were free from symptoms after three years and 47 per cent after five years.

In reviewing statistical reports as to the results of surgery and irradiation in carcinoma of the breast the authors found that in cases without palpable glands a five-year cure was obtained by surgery alone in 77 per cent of the case and by surgery combined with irradiation in 74 per cent. Their own records show that the combined method resulted in recovery in 89 per cent.

In the authors' 404 cases of recurrent carcinoma treated by irradiation the incidence of five-year cure was 18 per cent.

Of 156 patients treated for primary inoperable carcinoma five or more years ago 76 per cent are still alive.

Of 39 cases of primary operable carcinoma in which the diagnosis was definite a five-year recovery was obtained in 87 per cent.

The authors conclude that statistics do not justify the replacement of operation by primary irradiation but that operation should be supplemented by irradiation in all cases.

ALTON OCHSNER, M.D.

TRACHEA, LUNGS AND PLEURA

Francis B. F. Changes in the Shape and Size of the Tracheobronchial Tree Following Section of the Vagus Sympathetic Nerve
Arch. Surg. 1929 LIX 157

In experiments on dogs and cats carried out with a technique similar to that used by Heimbecker, Francis found that stimulation of the vagus sympathetic nerve results in a slight but definite decrease in the diameter of the tracheobronchial tree.

RALPH B. BRYMAN, M.D.

Heimbecker P. Caliber Changes in the Bronchi in Normal Respiration
Arch. Surg. 1929 LIX 1574

The changes in the caliber of the bronchi during normal respiration were studied in five human subjects and three animals.

In the human subjects the observations were made after the instillation of 40 per cent iodized oil into the bronchial tree. Roentgenograms were made at a fixed distance and at definite stages of the respiratory cycle.

The roentgenograms showed that the bronchi and bronchioles are widest at the end of full inspiration and narrowest at the end of full expiration. In quiet breathing the changes in caliber are slight. In some of the long bronchi, particularly those to the lower lobe, a narrowing occurs during the first part of inspiration.

In experiments on recently killed animals the changes in the thorax occurring during the usual respiratory cycle could be reproduced mechanically.

by means of a rubber balloon placed in the mediastinum. The consequences of such increased pressure were local and varied directly with the extent in which the balloon was inflated and the position it occupied in the mediastinum. The initial change in the blood pressure following the injection of air into the rubber balloon was always a fall. The anterior mediastinum was considered to lie in front of the root of the lung and the posterior mediastinum behind the root of the lung.

Compression of the large blood vessels occurs much more easily than compression of the trachea or bronchi. Some of the consequences of increased mediastinal pressure are pulmonary emphysema, stagnation of blood in the lungs, interference with heart action, oedema of the lungs and the tracheo-bronchial mucous membrane and the appearance of fluid in the pericardial cavity. The position and size of the opening which is allowing air to escape into the mediastinum are of the same importance as in open pneumothorax. The presence of a tension pneumothorax or an uncomplicated unilateral or bilateral pneumothorax as consequences of mediastinal emphysema must always be excluded.

Mediastinal emphysema was produced directly by various means including the direct injection of air into the mediastinum and the production of a tracheal fistula. The air causing the emphysema follows the normal fascial planes particularly the

sheaths which surround blood vessels. It may extend also retroperitoneally, outline the kidneys and compress the renal vessels. Large amounts of blood may become stagnant in the lung without producing marked pressure changes in the circulation.

The direct injection of frequent small amounts of air into the mediastinum caused a fall in the blood pressure and an increase in the respiratory rate. The blood pressure soon returned to normal if the injections were not repeated too frequently. In the venous pressure only gradual rises and falls were observed. These followed no definite rule. Transitory terminal rises in the venous pressure concomitant with the fall in the arterial pressure were noted.

The effects of the injection of mixtures of paraffin and iodized oil which solidified were also determined.

JACOB M. MORA, M.D.

DUGUID J. B. and KENNEDY A. M. Oat Cell Tumors of the Mediastinal Glands. *J. Path. & Bacteriol.* 1930 LVIII 93

After citing Barnard's theory that the "oat cell sarcoma" of the posterior mediastinum is a medullary carcinoma of the bronchus, the authors report a tumor of the thymus and a tumor of the mediastinal lymph glands, both of which showed oat cell features. They conclude that oat cell forms in a mediastinal tumor are not always indications of bronchial origin.

JOSEPH E. NARAT, M.D.

In the surgical treatment of tuberculosis Singer and Graham are in the habit of removing larger sections of the ribs than is usually advised.

A case of cardiomyositis for chronic mediastinal pericarditis is reported.

The results obtained in chronic pulmonary suppuration treated by cauter pneumectomy are shown in the following table.

CHRONIC PULMONARY SUPPURATION TREATED BY CAUTERY PNEUMECTOMY

Cases	No	%
Definite improvement	54	
Moderate improvement	35	65.6
Slight improvement	2	3.6
No improvement	3	5.6
Deaths (operative mortality)	7	12.6
	6	11.0

Late results

Cases	No	%
Patients still alive (all at work)	54	
Definite improvement	36	66.6
Moderate improvement	34	63.0
Slight improvement	1	1.6
No improvement	0	
Deaths (operative mortality)	1	1.6
Late deaths not directly due to operation	6	11.0
Bronchial fistula still present	12	22.0
	17	47.0

RALPH B. VERTMAN, M.D.

ESOPHAGUS AND MEDIASTINUM

Andrus W. DeW. and Donnelly J. L. The Effects of Certain Operations on the Esophagus of the Dog Including Esophageal Obstruction and Complete Esophageal Fistula. *Arch Surg* 1930 21: 1.

All of the operations reviewed were performed under ether anesthesia after the preliminary hypodermic administration of $\frac{1}{4}$ gr (0.016 gr.) of morphine sulphate. The morphine caused emesis and purging. Samples of blood were drawn before and at intervals after the operation and determinations of the blood chlorides, the carbon dioxide combining power of the plasma, the blood urea nitrogen and in some cases the blood sugar were made. In some of the experiments the rectal temperature was taken before the operation and daily thereafter. All of the dogs were kept in cages and at first the amount of urine and feces excreted was recorded. The excreta were scanty, however, and after careful measurement and analysis in a few cases further collection was abandoned as the data obtained were not significant. A series of animals were weighed before operation and after death and the loss of weight was noted. At necropsy all animals were discarded from the series in which an obvious cause of death other than esophageal obstruction such as emphysema pneumonia or mediastinitis was demonstrable.

In order to make the operations similar in as many cases as possible the following procedure was used in most instances:

An ordinary wooden spoon was whittled into an hour glass shape and the hole through the middle enlarged to permit the insertion of a thin walled nickel tube about 1 cm in diameter. This tube projected for a distance of about 1 in from the lower end of the spoon. To produce obstruction the hole in the spoon was plugged with wood and to produce an esophageal fistula a soft walled rubber tube of large caliber was attached to the nickel tube projecting from the spoon and brought out through a tangential gastrostomy opening. In the cases of other dogs which were subjected to operation, of practically the same magnitude as those with obstruction and fistula, the spoon with the short nickel tube inserted was ligated in the esophagus so that it did not prevent the passage of saliva into the stomach.

The striking result of these experiments was that the dogs invariably died following the sudden and complete obstruction of the esophagus and following the production of an esophageal fistula without the subsequent administration of fluids. The cause of death under such circumstances is not clear. While dehydration may play a rôle it is not the sole agent as is evidenced by the fact that animals can live for thirty days or more when food and water are entirely withheld. Moreover animals dying with esophageal obstruction do not exhibit the terminal rise in the temperature usually noted in animals dying from dehydration.

The studies of the changes in the chemical composition of the blood in this series indicated a tendency toward a decrease in the carbon dioxide combining power of the plasma and in the chlorides of the blood in some animals but these changes were not constant. In a few instances the blood urea nitrogen showed a terminal rise. The average duration of life following the production of an esophageal fistula and without the administration of fluids was seventy three hours. One animal lived for six days.

The authors have been unable materially to increase the duration of life of animals with esophageal obstruction by the administration of sodium chloride or of sodium chloride and sodium bicarbonate.

The fact that the animals with esophageal fistula died almost as soon as those with esophageal obstruction and apparently in a similar manner suggests that the loss of saliva may play an important rôle in the lethal outcome. Studies are now being made with regard to this problem.

JOHN J. MALONEY, M.D.

Ballou H. C. and Francis B. F. The Consequences of Variations in Mediastinal Pressure. Mediastinal and Subcutaneous Emphysema. *Arch Surg* 1919 21: 1617.

Practically all of the forty experiments reported in this article were performed on rabbits because the mediastinum of the rabbit is best fitted for such investigations. The effects of a sudden confined increase in the mediastinal pressure were determined

days after the operation of acute hæmorrhage from a large duodenal ulcer. The ulcer was discovered at autopsy. Autopsy revealed also a gall stone completely obstructing the lumen of the common duct and a pancreatic stone partially obstructing the main pancreatic duct. The formation of the ulcer was attributed to the interference with the discharge of alkaline pancreatic juice and hile into the duodenum.

Attention is called to the formation of identically similar ulcers in dogs following surgical duodenal drainage, an experimental procedure which diverts the pancreatic juice and the hile from the region of the pylorus.

CARL R. STEINKE, M.D.

Eggers, H. The Origin of Gastric Ulcer and the Problem of Its Treatment (Ueber die Entstehung des Magengeschwüres und das Problem seiner Behandlung). *Abhandlungen* Würzburg 1929, xvii, 141.

The author begins his discussion with a review of the various theories as to the origin of gastric ulcer. He bases this review on the development of the surgical treatment of the lesion as each new theory of ulcer genesis has been reflected in new therapeutic measures.

It is now generally believed that the formation of a gastric ulcer can occur only as the result of circulatory disturbances in the stomach wall. The exclusion of a sharply circumscribed portion of the blood supply explains the origin of the acute lesion and its characteristic form. Häuser concluded from his careful (pa thologic) anatomical studies that gastric ulcers arise chiefly from the red infarct, and that this infarct formation is due in turn to occlusion of an artery in the stomach wall from local or reflex irritation of the vasomotor nervous system. This arterial occlusion may or may not be accompanied by diapedesis in the capillary area depending upon the intensity of the irritation. The persisting stasis results in a red infarct leading to necrosis which involves the mucosa alone or with the submucosa or the entire stomach wall depending upon the site of the arterial obstruction. An ulcer is produced by separation of the necrotic tissue. The role of the gastric juice in digesting the necrotic tissue is of a secondary nature.

Local irritation may be caused by thermal, chemical or mechanical factors. Indirect reflex irritation is also possible. Ricker states that there is nothing to disprove the assumption that stasis and diapedesis in the stomach may result from psychic disturbances. The objection might be raised that all of the types of irritation mentioned occur very frequently in all persons and yet not all persons develop a gastric ulcer. In reply it may be said that the irritability of the nervous system varies greatly not only in different persons but also from time to time in the same person.

The author is of the opinion that this general vegetative neurosis or the local neurosis of the stomach represents the constitutional peculiarity which

renders the origin of ulcer possible. It may be congenital or acquired. According to the view of Ricker all ulcer symptoms—hypermotility, hypersecretion, a tendency toward hæmorrhage, a change in the hydrogen ion concentration, and finally gastritis—are closely related to one another and no one of them may in any way be considered the cause of the ulcer.

According to the intensity of the irritation the extent of the irritated area and the local irritability of the vascular nervous system a solitary ulcer, multiple ulcers or gastritis develops.

Causal therapy must be directed toward the vascular nervous system. As surgical procedures on the nervous system have failed to give worthwhile results the attempt must be made with the aid of internal medicine to change the tone of the nervous system particularly the vascular nervous system of the stomach. Two methods are available viz the use of drugs, chiefly parenteral foreign protein therapy and the use of diet. The author is of the opinion that it is possible by these methods not only to heal the ulcer but also to remove the constitutional predisposition toward ulcer development. As a rule surgery should be employed only when medical treatment fails. Absolute indications for operation are acute perforation, complete cicatricial stenosis of the pylorus and callous ulcer in which a cancer may be concealed. These indications are definite and are excluded from the discussion. The author deals only with the question as to whether the surgeon may expect good results from the available methods of operation in other forms of ulcer disease.

1. *Gastro enterostomy*. Eggers states that it is very doubtful whether a change in gastric function may be attained by gastro enterostomy. At most, it is possible only that the more rapid emptying of the stomach may relieve some of the local irritation. Moreover the permanent results are not satisfactory. While the older surgeons who operated according to limited indications reported the incidence of cure as high as 85 per cent, the incidence of permanent cure has fallen alarmingly low since the indications have been increased. Floercken gives it as 58 per cent and Hedlund as 30 per cent. The last Rostock statistics showed a permanent cure in only 40.5 per cent of cases and complete failure in 35.8 per cent. Von Haberer reports the incidence of failure at from 20 to 40 per cent. Gastro enterostomy cannot keep an ulcer from becoming callous and does not protect against perforation or failure to diagnose a carcinoma. Finally experience teaches that peptic ulcer of the jejunum develops in 8.9 per cent of cases treated by gastro enterostomy but in only 1 per cent of cases treated by resection. All of these disadvantages have led most surgeons to prefer resection.

2. *Resection*. The advantages of resection are that it removes not only the ulcer itself but also the entire diseased portion of the stomach and in this way tends to prevent recurrence. However it is not to be regarded as a true causal therapy. In removing the diseased organ it prevents the possibility of a restor-

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Donald C. Strangulated Internal Hernia in a Retro Appendicular Paracæcal Pouch. *Brit J Surg* 1930 xii 463

A man fifty seven years of age developed symptoms of severe obstruction of the small intestine accompanied by a palpable indefinite lump in the right iliac fossa.

At operation an internal hernia containing incarcerated ileum was found. The hernial pouch which measured 10 by 9 cm. lay to the inner side of the ascending colon just above the ileocaecal junction and external to the line of attachment of the mesentery proper. Its outer boundary was formed by the ascending colon which was fused to the posterior abdominal wall and its anterior wall was formed by the mesentery of the ileocolic junction with the appendix fused to it on its under or posterior surface. The opening which was 1.5 cm. in diameter was located just behind and slightly to the inner side of the cæcum. The cæcum had unusual mobility.

The author states that this hernial pouch was due to failure of fusion of the ascending mesocolon with the parietal peritoneum in the terminal stage of rotation of the gut probably caused by the position of the appendix. *JOHN H. WOOLSEY, M.D.*

GASTRO INTESTINAL TRACT

Glasen A. C. Gastro Intestinal Manifestations in Syphilis. *Am J Syphilis* 1930 xiv 53

Glasen reports ten cases of syphilis in which the chief symptoms were referable to the gastro-intestinal tract and emphasizes the importance of looking for syphilis in the cases of patients presenting gastric symptoms which do not yield to the ordinary routine treatment for the secretory disturbances. He states that syphilis is frequently overlooked because it is not suspected.

The clinical picture of gastric neurosyphilis is often difficult to differentiate from that of true gastric syphilis. The gross gastric lesion of a syphilitic of the stomach in both the hereditary and the acquired form may be any one of the following:

1. Gastritis. This develops in all stages of syphilis including the early secondary stage.
2. A circumscribed new growth the gumma.
3. Diffuse gummatous infiltration and hyperplasia with the thickening of the wall of all or a part of the stomach and the pyloric antrum. This form begins in the submucosa and extends to the mucosa and muscularis.
4. Gummatous plaques on the mucous surface. Ulcers are generally multiple. They often extend

upward along the lesser curvature and involve the greater curvature also to some degree. The fibrous may be so pronounced as to form a callous ulcer. The ulcer may be the result of an obliterating endarteritis. Fibrous changes such as scars may lead to stenosis when they involve the pylorus. They may also cause necrosis.

5. Gastric deformity such as shrinkage of the stomach from gummatous infiltration or fibrous hyperplasia.

Except in the aorta and liver syphilitic lesions can be identified only during the active stages of the infection.

In syphilis of the stomach profuse hemorrhage perforation and fistula formation are rarer than in cases of benign ulcer but hyperplastic chronic gastritis is more common. In 50 per cent of cases of tabes acute bleeding from the stomach is due to an ulcer rather than the tabes.

Cases may be classified according to symptoms as follows: (1) those suggesting gastric ulcer (2) those suggesting gastritis and achlorhydria (3) those of the diffuse fibrosis or scirrhous carcinoma type (4) those showing retention and duodenal ulcer deformity and (5) those with functional disturbances occurring as gastric crises.

In true organic syphilis of the stomach the blood Wassermann test is generally positive but gastric symptoms may be present in neurosyphilis in which the blood and spinal fluid Wassermann tests are negative. In a large percentage of cases of gastric syphilis there are no positive roentgenographic findings indicative of syphilis. When an ulcer is present it is almost invariably detected.

A positive history in addition to positive blood and spinal fluid reactions other signs of syphilis and gastric manifestations with corroborative roentgenographic findings in the case of a patient between thirty and forty five years of age must be considered presumptive evidence of gastric syphilis.

The treatment for syphilis underlying a gastric complaint must be directed according to the indications in the particular case. Very frequently treatment is followed by functional and chemical recovery manifested by a change in the acidity values.

MORRIS H. KAHN, M.D.

Morton C. B. and Graham J. B. Observations on Peptic Ulcer. *Ann Surg* 1930 xci 73

In a case reported by the authors the history led to an operation for disease of the gall bladder. The appendix and gall bladder were excised multiple stones were removed from the common bile duct and a choledochotomy was performed. There was no palpable or visible evidence of ulceration of the stomach or duodenum. The patient died twenty four

valve tumors angiomas myomas and multiple polypus. The ball valve tumors which are pedunculated and attached near the pylorus tend to pass through the pylorus into the duodenum. They often cause obstruction, and in the roentgenogram may suggest a duodenal tumor.

The symptoms of benign tumors of the stomach are varied. They must be differentiated from those of carcinoma, ulcer, gastritis, pernicious anemia and functional dyspepsia.

The roentgen signs depend upon the size, shape, location and number of the tumors. Among the principal findings are a filling defect with a smooth contour which is usually central, round or oval and sharply outlined and peristalsis passing through the gastric walls in the region of the defect. The gastric wall in the region of the tumor is flexible. The defect itself is frequently movable. A pedicle may be demonstrated. If the tumor prolapses through the pylorus the defect may appear in the duodenal bulb. The lumen of the stomach is not decreased. Pyloric obstruction with a six hour residue may be present. In cases of polypus the barium shadow may show numerous defects suggesting the holes in a sponge. In cases of hypertrophied gastric mucosa the defects may appear as ridges of an exaggerated type. The rugae above and around the tumor may be unaffected.

In looking for benign lesions of the stomach it is of prime importance to use only a small amount of barium and to manipulate the stomach by pressure to drag out the defects. WILBUR BAILEY M.D.

Morice. Three Cases of Occlusion of the Intestine by a Biliary Stone. (Trois cas d'occlusion intestinale par calcul biliaire.) *Bull et mtr Soc nat de chir* 1939 1v 1187

The first case reported was that of a woman who entered the hospital with a history of violent colics, frequent vomiting and oliguria for four days, during which time there had been no passage of feces or gas. Her pulse was 120 and small.

At operation performed under spinal anesthesia the small intestine was found to be extremely distended and dark red and to contain two stones, each the size of half a lemon. One of the stones was about 1 cm from the ileocecal valve and the other about 20 cm farther down. The stones were removed through longitudinal incisions made between clamps. After their removal the intestinal contents were allowed to flow out and the intestine was washed with physiological salt solution. The openings were then sutured. The two stones placed together formed what was undoubtedly a cast of the gall bladder.

The patient suffered slight shock, but soon after the operation gas and a stool were passed. On the eighth day generalized peritonitis developed and on the tenth day death occurred.

At autopsy the peritoneal cavity was found to contain a yellowish liquid composed largely of bile. The intestinal wounds were perfectly cicatrized. The fluid was most abundant in the right hypochondrium. Both the gall bladder and the duodenal bulb were

perforated. Morice believes that the enormous stone was passed into the intestine in two fragments as the result of a spontaneous cholecystoduodenostomy, and that the fulminating nature of the peritonitis was due to the absence of adhesions in this region.

The second case reported was that of a woman fifty-five years of age who had suffered for forty-eight hours from incessant vomiting, colics, and oliguria. At the time of examination at the hospital the abdomen was distended, the pulse 110 and the temperature 38 degrees F. As the patient was fat, intestinal peristalsis was difficult to perceive. The pains on palpation appeared to be localized about the umbilicus. The patient stated that about twenty years previously she had had hepatic colics with jaundice. After the possibility of occlusion due to a neoplasm had been eliminated, a diagnosis of biliary ileus was considered because of the earlier hepatic colic, the presence of a dull and persistent pain under the liver and slight dyspeptic disturbances.

At operation performed under spinal anesthesia the small intestine was found extremely distended and a biliary calculus the size of a large nut was discovered about 1.5 m from the duodenojejunal angle. An elastic clamp was placed below the obstruction and the stone removed through a longitudinal incision. After expression of the contents of the intestine and lavage of the bowel with 2 liters of physiological salt solution the incision was sutured.

The operative results were excellent, the patient leaving the hospital on the twenty-second day. However, thirty-five days after the operation she was brought back suffering severe pain in the abdomen, especially in the region of the kidneys. Her face was of a leaden color and covered with cold sweat. Her extremities were cold, and her pulse so small that it could not be counted. Laparotomy revealed a hemorrhagic pancreatitis with extensive lesions and with spots over the entire peritoneum. Drains were placed in the pancreas but death occurred that night.

The third case was that of a woman aged forty-eight years who was taken suddenly with a digestive disturbance accompanied by pain in the right hypochondrium, nausea and diarrhea which lasted two days. After this attack she was well for two days except that she had no appetite. On the third day she experienced a violent attack of colic accompanied by nausea. On the fourth day she vomited and her abdomen was hard and slightly distended. No stools had been passed for four days. The vomiting became more frequent. However, one day it stopped and a fetid stool was passed. The next day it recurred and no nourishment could be taken. On the tenth day after the first attack the patient was brought to the hospital in an apparently moribund condition.

As the pain was most severe in the right iliac fossa a right lateral laparotomy was done under local anesthesia. A biliary calculus the size of a small mandarin orange was found about 2 m from the ileocecal valve. Over it the intestinal wall was thin and dark red. A longitudinal incision about 5 cm in

ation to normal. Moreover the good early results may not endure. This operation may also be followed by peptic ulcer of the jejunum. To prevent peptic ulcer of the jejunum with certainty the removal of from two thirds to three fourths of the entire stomach has been advised. Undoubtedly this produces a stomach that is too small. Final judgment as to the end results of resection is not yet possible but it is evident that care is necessary in establishing the indications for the operation.

In conclusion the author emphasizes again that operation should be considered only after failure of thorough medical management. He objects to indiscriminate extensive resections of the stomach in cases without definite findings and without adequate previous medical treatment. He emphasizes that the chief essential in the treatment of gastric ulcer is co-operation between the internist and surgeon.

ZILLMER (1)

Judine S. The Treatment of Perforated Ulcers of the Stomach and Duodenum (A propos du traitement des ulcères perforés de l'estomac et du duodenum). *Bull et mém Soc nat de chir* 1929 15: 1733

Judine reports upon 195 cases of perforated ulcer of the stomach and duodenum which were treated in the Central Hospital for Emergency Surgery at Moscow during a period of four and a half year. On the basis of the treatment, he divides the cases into 2 groups—123 which were treated in the first three and a half years and 72 which were treated during the last year of the period under consideration.

In the first group there were only 2 cases of ulcer in women. The ulcer was in the duodenum and pylorus in 101 cases and in the stomach in 21. There was 1 case of gastrojejunal ulcer. Judine states that as suture of a perforated ulcer in the region of the pylorus or in the duodenum is inevitably followed by stricture the operation must be supplemented by gastroenterostomy. In the first group of cases gastroenterostomy was done 117 times and resection according to the Billroth II method once. Suture alone was done in only 2 cases and drainage alone only in the cases of 3 patients who were moribund. The general mortality was 24.4 per cent and was directly related to the length of time that elapsed between the perforation and the operation. In the cases operated upon in the first six hours after the perforation the mortality was 5.5 per cent; in those operated upon between the sixth and ninth hours it was 20 per cent; in those operated upon between the ninth and twelfth hours it was 40 per cent; and in those operated upon more than two days after the perforation it was 100 per cent.

In 30 autopsies multiple ulcers were found 7 times.

The end results were determined in 48 cases. Only 25 of the patients were completely cured. Fifteen complained of dyspepsia and 8 of quite severe pains

and vomiting. Therefore in 20 per cent of the cases gastroenterostomy gave poor results.

When the operation was performed under spinal anesthesia the mortality of gastroenterostomy was from 1/35 to 2 per cent and that of resection 7 to 10 deaths per 100 cases. Since Judine has used splanchnic anesthesia his results have been much improved.

In many cases of perforated ulcer there is a history of ulcer but in one fourth of the cases reviewed the perforation was the first indication of the disease. Absence of hepatic dullness is found in 30 per cent of the cases but is not a dependable sign as distention of the colon by gas may simulate pneumoperitoneum. Roentgenography may facilitate the diagnosis. The author cites 2 cases in which an error in diagnosis was made.

The second group of cases reviewed by Judine included 35 of ulcer of the duodenum, 7 of ulcer of the pylorus, 26 of ulcer of the stomach and 4 of gastrojejunal ulcer.

In 28 of the 35 cases of ulcer of the duodenum resection was done with 2 deaths and in 7 suture and gastroenterostomy with 4 deaths. In the 7 cases of ulcer of the pylorus resection was done twice with 1 death and gastroenterostomy 5 times also with 1 death. In the 26 cases of ulcer of the stomach resection was done 17 times with 3 deaths, suture with gastroenterostomy 9 times with 2 deaths and suture alone 3 times (patients in extremis) with 3 deaths. In the 4 cases of gastrojejunal ulcer there were 3 recoveries and 1 death.

The mortality of the 47 resections was 23.7 per cent and that of 28 gastroenterostomies 38.8 per cent. However the gastroenterostomies were done in advanced cases and those of aged patients. Judine cuts the 23.7 per cent mortality of resection in half by attributing 3 of the deaths to accidents unrelated to the operation.

DRYAT, who read Judine's report before the Society, suggested that the good results obtained in this series of cases should lead to the establishment of central emergency hospitals in Paris similar to those in Moscow as the incidence of perforated ulcer is about the same in both cities. He agreed with Judine that in the treatment of perforated ulcers of the stomach gastrectomy is the method of choice.

PAGE

Rigler L. G. Roentgenological Observations on Benign Tumors of the Stomach. *Am J Surg* 1930 viii 144

Benign tumors of the stomach produce symptoms of marked severity and may undergo malignant degeneration. It is probable that many gastric carcinomata of the polypoid type originated in a benign tumor.

Benign tumors of the stomach may be classified pathologically as multiple polypoid angiomata, myomata, fibromata, papillomata, polyps, fibromyomata, cysts and hypertrophied mucosa. From the clinical and roentgenological points of view they may be classified more simply as polypoid

The disinvagination should be brought about not by traction but by gentle pressure of the head of the invagination over the invaginating loop. Traction is apt to cause rupture. When reduction is complete and there are no necrotic lesions the intestine should be sutured in the normal position to prevent recurrence. In the authors opinion appendectomy should not be performed as it increases the disturbance of motility caused by the invagination. To prevent intoxication the intestine should be rapidly evacuated of the stagnated contents. The authors have employed various methods of stimulating motility including the use of hypophylin and eserin and the injection into the intestine of 20 gm of castor oil before the abdominal wall is closed.

In the postoperative care it is important to stimulate the defense keep the patient warm strengthen the pulse and keep up diuresis. Hypertonic salt solution is valuable in combating the intoxication. As its intravenous administration is difficult in young children the authors give it intramuscularly or by rectum.

AUDREY G. MORGAN, MD

Gueullette R. Biliary Ileus and Double Stenosis of the Small Intestine Enterectomy Recovery (Ileus biliaire et double sténose du grêle entérectomie guérison) *Bull et mem Soc nat de chir* 1929 iv 1190

Gueullette reports the case of a woman fifty years of age who entered the hospital on account of abdominal pains which had begun three weeks previously. At first the pains were vague but they gradually became more severe and ultimately became localized in the right iliac region. They were associated with constipation and mild digestive disturbances. Vomiting had not occurred.

On examination the abdomen was found slightly tympanitic, but its walls were flexible. The temperature was 37.9 degrees C. Two days later, following a spontaneous stool the pain gradually ceased and the temperature returned to normal.

At operation performed under general anesthesia two strictures of the small intestine were discovered. One was about 30 cm. from the ileocecal valve and the other in a loop absolutely free from adhesions about 15 cm. farther down. In the dilated portion of the intestine between the strictures the wall of which was greatly thickened two stones were found. A 24 cm. portion of the intestine was resected and continuity re established by end to end anastomosis. Recovery resulted.

The stones were of the size of large beans and showed peripheral stratification. Chemical and roentgen examinations proved them to be of biliary origin. The strictures were the result of mild chronic inflammation.

SAUVÉ who read Gueullette's report to the Society cited a similar case that of a woman fifty years of age upon whom he performed an enterotomy. A resulting fistula led him to doubt the wisdom of choosing enterotomy to enterectomy, but the patient ultimately recovered completely.

ROUX-BERGFR also reported a case in which enterotomy for the removal of two stones was followed by recovery. A few days after the operation the patient passed a smaller calculus through the anus.

MONDOR presented a roentgenogram of biliary ileus but stated that he was undecided as to whether the ingestion of barium is harmful or not in cases of occlusion. PAGE

Brocq Brodin and Aimé. A Case of Biliary Ileus in Which Roentgen Examination Revealed Fifteen Days Before the Symptoms of Occlusion a Calculus That Had Become Impacted in the Duodenum After Cholecystoduodenal Perforation (Un cas d'ileus biliaire examen radiologique ayant révélé quinze jours avant l'apparition des accidents d'occlusion l'existence du calcul enclavé dans le duodenum après perforation cholecystoduodénale) *Bull et mem Soc nat de chir*, 1920 iv 1194

The case reported was that of a woman fifty years of age who had been having attacks of what she described as a gastric disturbance for twenty four years. She had borne seven children. In 1904 three or four months after the birth of her first child she experienced an attack of severe abdominal pain which lasted for an hour and every year since then she had had a similar attack. In 1917 the attack was more severe being accompanied by vomiting and leaving a sensation of soreness for several days.

In April 1929 the patient was taken at about 10 p.m. with very violent pain in the epigastrium accompanied by vomiting which continued until about midnight. The next day it recurred and persisted until 4 p.m. when it yielded to a hypnotic. The patient then remained in bed for eight days. During that time she was comfortable but the pain recurred when she attempted to resume active life.

When she entered the hospital she weighed only 4 kgm. although her height was 1.56 m. The pulse was 100. Abdominal palpation in the recumbent position revealed fullness of the right flank independent of the liver appendix and kidney and palpation in the upright position disclosed sensitiveness a little below and to the right of the umbilicus. Roentgenoscopy showed the stomach to be normal but the passage of the bismuth into the duodenum revealed a very peculiar bulb with no power of contraction. The barium salt did not fill the bulb uniformly but seemed to infiltrate at its periphery without impregnating the central portion. There seemed to be a diverticulum in the descending portion of the duodenum.

Brocq concluded that a stone had become lodged in the duodenum after the formation of a cholecystoduodenal fistula. As the patient refused operation, she was kept under observation on a lacto-vegetarian diet and at complete rest. She gained 2 kgm. but after fifteen days she suddenly experienced a very violent abdominal pain which was different from the preceding attacks and was accompanied by abundant vomiting.

length was made the stone extracted and the liquid above the site of obstruction was evacuated. A liter of physiological salt solution was then passed into the intestine. After the operation hypertonic glucose solution, caffeine and camphorated oil were given. Recovery was uninterrupted. The patient left the hospital on the twenty fifth day and has remained well.

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McWatters R. C. Volvulus of the Small Intestine
Indian Med Gaz 1930 LXI 9

In Europe volvulus of the small intestine is comparatively rare but in India it is quite common. It has no distinctive symptoms by which it can be distinguished from other types of obstruction of the small intestine. Frequently the patient states that he has eaten some coarse indigestible food such as bran or has strained at work or at stool. The onset is usually sudden and the pain very severe. The degree of torsion varies greatly. In a few cases congestion may be extreme and gangrene may be present but more commonly the congestion is no greater than in other forms of obstruction, the twist being only enough to obstruct the bowel without greatly interfering with the circulation.

When the parts are fully exposed the cæcum and the lowest part of the small intestine are found to be empty and if a finger is made to follow the empty coil upward it winds around the left edge of the twisted mesentery and becomes lost to sight. In the milder cases the parts are so loose that it is difficult to believe that a volvulus is present but when the empty bowel is traced upward it is found to be continuous with the distended bowel above and when the whole mass is rotated in a clockwise direction the empty ileum and cæcum become filled. These observations and the recovery which usually results confirm the diagnosis but unless the nature of the obstruction is recognized by the manipulations described it is quite possible to reduce the volvulus without knowing it and to waste valuable time in searching for an obstruction which no longer exists.

In Europe recovery from acute obstruction which is not merely an episode in a case of chronic obstruction is extremely rare without operation but in India about one in eight of the patients who refuse operation and are treated by repeated high enemata are relieved although sometimes not until as many as four enemata have been given.

MORRIS H. ASHBY, M.D.

De Elizalde F. Vergaño M. J. and Moreno M.
R. Intestinal Invagination in the Infant (Inva-
ginación intestinal en el lactante). *Semana Méd*
1929 XXXVI 1230

It is not particularly hard for a specialist to diagnose intestinal invagination but the picture is not very well known to general practitioners and it is safe to say that the majority of deaths from the condition are due to delay in the diagnosis. The frequency of delayed diagnosis is due to the fact that the textbooks do not describe the initial symptoms.

Intestinal invagination of infants occurs most frequently in the first year of life. Its maximum incidence is between the fifth and ninth months. The earliest symptom is pain. This is accompanied by a characteristic change in the facial expression. Unlike the child with cerebral intoxication the child with intestinal invagination is at first active mentally. A little later, as the intoxication progresses he becomes indifferent. When the indifference comes on too soon to be explained by intoxication it is probably due to inhibition from the pain. Peritoneal facies may develop early. The authors saw it in one case at the eleventh hour. Crying may be continuous or paroxysmal. As a rule infants with invagination do not cry much but they may be very restless and generally they do not sleep. If they fall asleep at all they toss about constantly. Vomiting may occur from the beginning. When it persists and becomes bilious it indicates intoxication or peritonitis.

The pulse rate may decrease for the first few moments but soon become rapid. The respiration rate increases and sometimes there is paroxysmal dyspnoea. When copious vomit has occurred the abdomen may be flabby and scaphoid otherwise it is normal. Distention and tympany are signs of peritonitis. Sometimes the contracted loops of intestine can be seen through the wall of the abdomen during the spasms of pain. Palpation of the abdomen causes no defense reaction. Lack of evacuation of feces and gas, the presence of a tumor and the evacuation of blood are later signs.

If the condition is not treated stupor, dehydration, tympany, bilious or bloody vomiting, fever and putrid evacuations result and the tumor appears at the anus. The terminal symptoms are fecaloid vomiting, anuria, peritoneal facies, convulsions and coma.

The authors report a number of cases illustrative of the differential diagnosis from acute infectious, acute appendicitis and intestinal spasm.

The prognosis depends upon the type of the invagination.

The mortality is 53 per cent in invagination of the colon, 11.9 per cent in ileocolic invagination, 70 per cent in iliac invagination and 80 per cent in ileocolic invagination.

The macroscopic and microscopic changes in the intestine are oedema, enlargement of the mesenteric glands and degenerative changes in the cells. In short the change brought about by interference with the circulation.

The treatment should be early operation. Operation should be performed under general anesthesia. Chloroform is well tolerated. Either is more dangerous to the lungs of young children. The authors prefer a median incision below the umbilicus but some surgeons recommend an incision above the umbilicus. It is not hard to bring the intestines outside of the abdomen for examination as there is generally exaggerated mobility of the cæcum and colon. In fact a common mesentery is an important factor in the etiology of the condition.

Jansen states that neutralization of the gastric juice in the duodenum depends chiefly upon (1) reflux of the alkaline secretions into the stomach which is controlled by the pylorus and (2) reflex inhibition of gastric secretion caused by the presence of acid in the duodenum and jejunum. Of these the latter is by far the more important. Accordingly the operation which is most correct physiologically is the Billroth I procedure with extensive resection of the antrum. After this operation the antrum the center of the chemical secretory phase in the stomach is absent and only psychic secretion remains. The duodenal inhibitory reflexes come into play unweakened or even strengthened because there being no sphincter the gastric chyme goes unchecked through the gastroduodenal opening and reflux occurs more freely.

MORRIS A. SLOCUM, M.D.

lates H. B. A Remarkable Meckel's Diverticulum
Brit J Surg 1930 xvii 456

The case reported was that of a woman thirty-seven years of age who had had a large abdomen all her life suffered from constipation and for the last three months had complained of abdominal distention, dyspnea and colicky abdominal pain of increasing severity. Percussion revealed flatness of the entire right side of the abdomen.

At operation a large oval tumor mass arising from the ileum was found extending from the pelvis up under the liver in the right half of the abdomen and deflecting the cæcum and ascending colon toward the midline.

Autopsy disclosed a Meckel's diverticulum measuring 56 by 17 cm. which arose from the antimesenteric border of the ileum 8 cm. above the ileocolic junction. Posteriorly, the diverticulum had a mesentery. Its wall was composed of a low mucous membrane with glands resembling those of the small intestine, a muscularis mucosæ and circular and longitudinal muscle coats. The muscle coats were hypertrophied to five times the thickness of those of the ileum.

JOHN H. WOOLSEY, M.D.

Tidy H. L. The Diagnosis and Treatment of Catarrhal and Ulcerative Colitis. *Brit M J* 1930 1 135

Chronic catarrhal colitis is characterized by a diarrhea persisting over a long period of time and remaining more or less constant from day to day. Blood and mucus may be present in the stools in varying amounts. Chronic colitis may begin as an acute or subacute colitis or insidiously as a chronic form. Tidy believes that catarrhal and ulcerative colitis are identical and should be given the same treatment.

The conditions from which chronic catarrhal colitis must be differentiated are mucocutaneous colitis, dysentery, neoplasm of the colon and tuberculous of the colon. Mucocutaneous colitis is characterized by neurosis, constipation and the passing of mucus. During an attack the mucus is passed in the form of casts and the stools are solid unless a

laxative has been taken. Dysentery is diagnosed by the discovery of the specific organisms in the stools. Amoebic dysentery should be suspected in the cases of patients who have been exposed to amoebic infection. A patient with a history of such exposure should be given the advantage of a course of specific treatment. The neoplasms of the colon which must be differentiated are those producing constriction and obstruction of the intestine and those in which ulceration occurs. The symptoms vary according to the site of the growth. As the result of obstruction there is increased peristalsis with associated colicky pains. Malignant neoplasms of the pelvic colon should offer no difficulty in their differentiation from chronic colitis because the constant type of stools which are characteristic of the latter condition are seldom seen in pelvic malignancy. Tumors in the splenic and hepatic flexures and cæcum should offer little difficulty in the diagnosis. The differentiation between intestinal tuberculosis and chronic catarrhal jaundice is easy except in the late stages of the former when blood may be present in the faeces. However in tuberculosis of the cæcum the bowel movements are not so markedly increased in number as in chronic colitis.

The diagnosis of chronic colitis may be made by careful observation of the case over a period of days, sigmoidoscopy, roentgenography after a barium meal or enema and exploratory laparotomy. Colitis, if properly treated, has a high mortality. The author believes that sigmoidoscopy should not be employed in chronic catarrhal colitis because a correct diagnosis may be made without it and the introduction of the sigmoidoscope irritates the diseased rectal mucosa. Roentgenography following the administration of a barium meal or the injection of a barium enema will usually reveal the presence of a neoplasm. The barium enema is preferable to the barium meal. Exploratory laparotomy should be undertaken only after careful consideration.

The treatment of colitis consists in keeping the patient warm by applying external heat, administering large quantities of fluid to compensate for the loss of fluids and giving a high caloric diet. Food should be given at intervals of not more than two and a half hours. It should be well cooked. Milk and fats with the exception of butter should be used in moderation. Meat should not be given. Bread or toast, biscuits, butter, eggs, fish, jellies, and meat extracts may be taken freely. Custards and simple milk puddings are permissible.

Local treatment of the colon by means of enemas is of value. When the patient first comes under observation the author prescribes a starch and opium enema consisting of a mucilage of starch containing from 20 to 40 minims of tincture of opium. This enema is given at night so that the patient will obtain rest. Its effects last about twelve hours. It is not given on more than three consecutive days nor more than five times a week as its more frequent use causes irritation of the anus. Its administration is continued until the number of stools has been

A diagnosis of biliary ileus was made and twenty-four hours after the beginning of the attack she was brought to the hospital. She was then free from pain and palpation revealed only very slight sensitiveness at the right costal margin. However on the slightest movement she vomited the greenish material characteristic of occlusion of the small intestine.

At operation performed two hours later, a part of the small intestine was found dilated and congested and the terminal portion was discovered to be flattened like a ribbon. At the juncture of the two segments there was a large calculus. The calculus was extracted by enterotomy. The patient died on the afternoon of the second day following the operation.

Brocq did not aspirate the intestinal contents above the stone because the vomiting before the operation had been so abundant and because the distention had not been very great.

The photograph and roentgenogram of the calculus removed from the small intestine at operation gave an image exactly like that seen in the roentgenogram of the duodenum taken fifteen days before the symptoms of occlusion.

At autopsy, an abundant suffusion of blood was found in the sheath of the great rectus muscle on the right side. This may have played a rôle in the development of shock and may have been explained by the hepatic insufficiency. The peritoneal cavity was free from blood pus and intestinal fluid. The intestinal suture was holding perfectly. The lower border and the lower surface of the liver were closely united to the duodenum by very tight omental and peritoneal adhesions. When the adhesions were freed a perforation of the gall bladder obliterated by an omental mass was discovered at the juncture of the first and second portions of the duodenum, and when the duodenum was opened a second and larger perforation of the gall bladder into the duodenum was found in the same location. In the larger perforation there was a stone still largely included in the gall bladder but beginning to enter the duodenum.

This case shows the extreme tolerance of the duodenum to stones. From the clinical history it seems apparent that the patient was able to tolerate an enormous stone in the duodenal bulb for a month at least without other disturbances than a slight spontaneous sensitiveness in the right flank and slight pain on pressure.

PAGE

Masson J. G. and McIndoe A. H. Right Para-duodenal Hernia and Isolated Hyperplastic Tuberculous Obstruction. Comment and Report of a Case Affecting the Jejunum and Ileum. Operation and Recovery. *Surg. Gynec. & Obst.*, 1930, 1: 29.

The authors report a case of right paraduodenal hernia associated with marked obstruction of the herniated small intestine due to an isolated tumor which resembled a carcinoma but was of hyperplastic tuberculous origin.

This is the thirty-third case of right paraduodenal hernia to be reported, the sixteenth in which operation was performed, and the fifth in which recovery followed operation. Isolated hyperplastic tuberculous of the small intestine is rare; only seven cases have been reported. The association of the two lesions therefore makes the authors' case unique. A discussion of the clinical and pathological features of each condition is given.

The presence of tuberculosis in the hernial sac is attributed to stagnation of food and the slowing of the intestinal current in the sac. The conditions were therefore similar to those under which the same type of tuberculosis occurs in the cecum.

Fiddian Green W. B. A Case of Recurrent Duodenal Ulcer After Pylorotomy and the Formation of Bone in a Laparotomy Wound. *Brit. J. Surg.*, 1930, xvii: 555.

The author reports the case of a man forty-four years of age who had suffered from duodenal ulcer for seven years. The diagnosis was confirmed by X-ray examination. At operation many adhesions were found around the pylorus in addition to an ulcer in the first part of the duodenum which penetrated the pancreas. The ulcer-bearing segment of the duodenum was excised together with a small part of the stomach antrum and a Billroth I operation was performed. Uneventful recovery resulted.

About five years later the symptoms recurred and after they had persisted for three months the patient re-entered the hospital. A roentgenogram then revealed an ulcer in the upper part of the duodenum. At a second operation an ulcer of the posterior wall adherent to the pancreas was found. On account of the dense adhesions and induration it was possible to do only an anterior gastrojejunostomy.

A month after his discharge the patient returned with a hard cartilaginous mass in the scar. On removal this was found to be a piece of true bone 9 cm. long which formed a gutter enclosing the inner border of the right rectus muscle. In thirty-four of the thirty-six cases of bone formation in laparotomy wounds reported in the literature the bone occurred in wounds in or near the supra umbilical part of the linea alba. In the specimen in the author's case the thickest part of the bone was nearest the costal margin, a fact suggesting that cartilage cells may have been set free by injury.

An interesting feature of this case was the five-year period of freedom from symptoms following the first operation. Attention is called to the fact that the operation was done at a time when it was not realized that the chief essential in the treatment of duodenal ulcers by excision is the removal of a sufficiently large portion of the gastric antrum.

The author cites the observations of Jansen who collected from the literature twenty-one cases of recurrent ulcer following a Billroth I operation. In eleven the lesions recurred at the site of suture. Insufficient resection of the antrum explained nearly all of the recurrences.

basis of the literature. The rupture of an ovarian cystoma is followed by the escape into the abdominal cavity of tumor cells which multiply and may become attached at a distance from the site of rupture. In ruptured appendiceal mucocoeles on the other hand there is physiological cylindrical epithelium which always settles in the region of the organ from which it arose and although it may continue to function exhibits no noteworthy proliferation. However the rupture of an appendiceal mucocoele may be followed also by transplantation metastases as is evident from the literature. In such cases the question arises as to whether it is truly normal epithelium from the appendix or epithelium that has become pathologically changed although not into the form of tumor cells which becomes implanted in the abdominal cavity. Under such circumstances the prognosis is not so absolutely favorable as has been assumed heretofore.

In thirty five surgically treated cases of pseudo myxoma peritonei of appendiceal origin reported in the literature there were nine deaths (pulmonary embolus, infectious peritonitis, uræmia with septic infection of the myxoma cavity, pulmonary tuberculosis—pseudo myxoma not cured in spite of three operations—and adhesion of loops of bowel to one another by mucous masses).

In the differential diagnosis between pseudo myxoma peritonei of appendiceal and ovarian origin chemical examination of the mucus is of no assistance.

WANKF (Z)

Binkley G E. The Treatment of Inoperable Carcinoma of the Rectum. *Canadian M J* 1930 xxi 17

There has been a marked improvement during the past decade in the degree of palliation afforded in inoperable carcinoma of the rectum. This has been brought about by a better understanding of the disease and by improved methods of irradiation therapy. Since the cases have been more carefully selected and treated in accordance with their clinical and pathological features the reactions have been less severe and the results more gratifying. The author's records show that a number of patients treated for inoperable carcinoma of the rectum are now clinically free from the disease and that a larger number were rendered comfortable for periods ranging from one to eight years. In the very advanced stages of the condition the chief effect of palliative treatment is a decrease in the severity of the symptoms. In many instances however life is considerably prolonged.

In selected operable cases irradiation therapy alone is capable of producing as satisfactory results as radical surgical removal. In inoperable cases irradiation therapy alone or combined with palliative surgical measures results in greater palliation than any other present day method.

External irradiation is given most effectively by means of a pack containing 4 gm. of radium. The author employs from three to seven portals of entry

about the pelvis giving a maximum dose for each of from 50 000 to 60 000 mgm. hrs. with the pack at a distance of 15 cm. from the skin and a maximum dose for each of from 18 000 to 20 000 mgm. hrs. with the pack at a distance of 10 cm. from the skin. This is supplemented by a .40 ma. min. application of high voltage roentgen rays.

Binkley reports three cases in detail.

JOHN J. MALONEY, M.D.

Lockhart Mummery J. P. The Use of Radium in the Treatment of Rectal Carcinoma. *Brit M J* 1930 i 139

In the treatment of carcinoma of the rectum, radium may be used in three ways: (1) as an adjunct to excision to permit the performance of a less serious operation; (2) to treat cases that are inoperable; and (3) as a substitute for excision.

Since the discontinuance of the local operations and the adoption of colostomy with more radical excision the mortality of carcinoma of the rectum has markedly decreased. However a colostomy is very disagreeable to the patient and the author believes that by the proper use of radium it may be possible especially in the earlier cases to attempt local excision of the tumor without resorting to colostomy and more radical procedures.

In cases of tumors of relatively short duration located in the middle or lower part and on the posterior wall the author removed the coccyx and occasionally a portion of the sacrum, opened the rectum on the side of the growth and removed the tumor completely with a margin of healthy tissue around it. He then closed the wound of the rectum transversely and placed radium needles in the mesorectum as high as possible. He closed the external wound around a small drain. One week later he re-opened the wound, removed the radium needles and established free drainage.

In only one case was there any leakage through the wound. Function was completely restored. The only recurrence in the scar developed six months later and was treated successfully with radon seeds.

The author emphasizes that radium should never be used as a substitute for extirpation. He has employed it only in cases in which the patient refused radical surgery or colostomy. The best results he has seen were obtained in cases of epithelioma of the anus occurring in elderly persons. In one case an epitheliomatous ulcer was cured by the insertion of radon seeds.

In inoperable cases of carcinoma of the rectum radium irradiation is of special value. Previously much too large doses were employed. At the present time doses up to 6 000 mgm. hrs. with 1 mm. of platinum screening are found most beneficial. Three milligram needles are placed 1 cm. apart, paralleling the bowel lumen. They are left in place for from a week to ten days. When the needles are removed the wound is left wide open.

To deal with abdominal and pelvic metastases it is necessary to perform a laparotomy. To prevent

reduced by half or to about five daily which usually requires about three weeks.

At the end of that time the patient may be given colonic washes with a solution consisting of 1 dr of sodium chloride or 2 dr of sodium bicarbonate to a pint of water. About 2 pt are usually injected. These washes are used not oftener than on alternate days and are given in conjunction with the starch and opium enemas until there has been a definite decrease in the number of stools. In severe cases they must be continued for from six to eight months.

The patient is then treated with medicated enemas consisting of from 20 to 30 gr of albargin in 30 oz of normal saline solution. These are given on alternate days not more than six being administered in a period of two weeks. They cannot be retained long because they cause discomfort and may become painful. They should never be retained longer than twenty minutes. It is usually necessary to use medicated enemas for from two to three months.

Incontinence of feces which does not respond to the starch and opium enemas is an indication for surgical treatment. As a general rule morphine should not be administered because it does not affect the disease process and merely gives the patient a sense of improvement. Tincture of opium in 5 minims doses by mouth four times a day is permissible. Other drugs given by mouth are bismuth, charcoal and kaolin. Their exact value is not known. Vaccines are of no value.

In contrast to chronic colitis acute colitis usually begins suddenly and is associated with gastric symptoms especially vomiting. It is essential to prevent loss of heat and fluids from the body. The local treatment consists in the administration of a starch and opium enema.

ALTON OCHSNER, M.D.

Anderson J. H. and Marzer O. A. Multiple Polyposis of the Colon. *Brit J Surg* 1930 xxv 351.

The authors emphasize the value of sigmoidoscopic and roentgen ray examination in the diagnosis of multiple polyposis of the colon and report two cases of that condition.

In the roentgenogram the barium filled bowel is studded with concave impressions on an otherwise smooth margin and the mucosa presents a honeycomb appearance due to displacement of the barium by the polyps. Incomplete mass movements slowing of the relaxation phase and absence of segmentation are noted.

One of the patients whose cases are reported by the author had a brother and a sister who suffered from ulcerative colitis and a sister who died from cancer of the rectum.

JOHN H. WOOLSEY, M.D.

Lecaplain. Influenzal Abdominal Syndrome of the Pseudo Appendicular Form (Syndrome abdominal groupé à forme pseudo-appendiculaire). *Bull et mém Soc méd d hôp de Par* 1929 xlv 141.

Lecaplain reports briefly four cases of influenza with an abdominal syndrome suggesting appendicitis.

The patients were between the ages of eight and eighteen years. The onset was sudden with the usual symptoms of influenza—elevation of the temperature, headache, lassitude, redness of the tonsils and a blue-gray discoloration of the tongue. On the second or third day pain developed in the right iliac fossa with tenderness on pressure at McBurney's point but without defense on the part of the abdominal wall. Nausea and constipation were present but there was no hiccup or vomiting. In the first case there was pain in the epigastrium and both iliac fossae on the second day. In general the pain in the region of the appendix lasted for from two to four days. The symptoms then subsided spontaneously and recovery was complete after from eight to twelve days. The treatment consisted of a fluid diet, the application of cold compresses to the abdomen, the administration of sodium citrate and disinfection of the nasopharynx. There does not appear to have been either a true appendicitis or a lighting up of an old appendicitis.

The author suggests that the condition may have been a mild abdominal angina with a transient focal reaction of the appendicular lymphoid tissue corresponding to the reddening of the tonsils but believes that it was more probably a sympathetic syndrome which was centered at a point to the right of the umbilicus simulating McBurney's point.

Immediate intervention does not seem to be demanded. On the contrary, operation during influenza epidemics would expose the patient to grave pulmonary complications.

FLORENCE I. CARRISER.

Lieblein A. The Clinical Picture of Mucocele of the Appendix and of Pseudomyxoma of Appendiceal Origin (Zur Klinik der Mucocele des Wurmfortsatzes und des Pseudomyxoms appendicularien). *Ursprungel Beitr klin Chir* 1929 cxlvii 119.

The author reviews all cases of mucocele of the appendix recorded in the literature to date and reports in detail five cases of his own.

In Lieblein's first case there was a cyst of the appendix which was completely isolated from the caecum. Such cases are rare. More frequently appendiceal retracts or pinched off portions of the appendix are the site of the cyst formation. These also may be found at some distance from the caecum. The diagnosis before operation is difficult especially when the cysts are large and there is no history of an appendiceal condition. The X-ray has not aided in the diagnosis. In one of the author's cases the mucocele developed after the incision of an abscess. In another it followed the opening of a retroperitoneal pseudomyxoma. In the latter case a recurrence was found at a second operation. The recurrence is attributed by Lieblein to mucus secreting epithelium that was presumably left in the retroperitoneal space in rather large quantity at the time of the first operation and maintained its function over a period of years.

The difference between pseudomyxoma after appendicitis and ovarian disease is discussed on the

basis of the literature. The rupture of an ovarian cystoma is followed by the escape into the abdominal cavity of tumor cells which multiply and may be come attached at a distance from the site of rupture. In ruptured appendiceal mucoceles on the other hand there is physiological cylindrical epithelium which always settles in the region of the organ from which it arose and although it may continue to function exhibits no noteworthy proliferation. However the rupture of an appendiceal mucocele may be followed also by transplantation metastases as is evident from the literature. In such cases the question arises as to whether it is truly normal epithelium from the appendix or epithelium that has become pathologically changed although not into the form of tumor cells which becomes implanted in the abdominal cavity. Under such circumstances the prognosis is not so absolutely favorable as has been assumed heretofore.

In thirty five surgically treated cases of pseudo myxoma peritonaei of appendiceal origin reported in the literature there were nine deaths (pulmonary embolus infectious peritonitis uræmia with septic infection of the myxoma cavity pulmonary tuberculosis—pseudomyxoma not cured in spite of three operations—and adhesion of loops of bowel to one another by mucous masses).

In the differential diagnosis between pseudo myxoma peritonaei of appendiceal and ovarian origin chemical examination of the mucus is of no assistance.

WANKLE (2)

Binkley G E. The Treatment of Inoperable Carcinoma of the Rectum. *Canadian M Ass J* 1930 xxi 1

There has been a marked improvement during the past decade in the degree of palliation afforded in inoperable carcinoma of the rectum. This has been brought about by a better understanding of the disease and by improved methods of irradiation therapy. Since the cases have been more carefully selected and treated in accordance with their clinical and pathological features the reactions have been less severe and the results more gratifying. The author's records show that a number of patients treated for inoperable carcinoma of the rectum are now clinically free from the disease and that a larger number were rendered comfortable for periods ranging from one to eight years. In the very advanced stages of the condition the chief effect of palliative treatment is a decrease in the severity of the symptoms. In many instances however life is considerably prolonged.

In elected operable cases irradiation therapy alone is capable of producing as satisfactory results as radical surgical removal. In inoperable cases irradiation therapy alone or combined with palliative surgical measures results in greater palliation than any other present day method.

External irradiation is given most effectively by means of a pack containing 4 gm of radium. The author employs from three to seven portals of entry

about the pelvis giving a maximum dose for each of from 50 000 to 60 000 mgm hrs with the pack at a distance of 15 cm from the skin and a maximum dose for each of from 18 000 to 20 000 mgm hrs with the pack at a distance of 10 cm from the skin. This is supplemented by a 40 ma min application of high voltage roentgen rays.

Binkley reports three cases in detail.

JOHN J. MAFONEY M.D.

Lockhart Mummery J P. The Use of Radium in the Treatment of Rectal Carcinoma. *Brit M J* 1930 i 139

In the treatment of carcinoma of the rectum radium may be used in three ways (1) as an adjunct to excision to permit the performance of a less serious operation (2) to treat cases that are inoperable and (3) as a substitute for excision.

Since the discontinuance of the local operations and the adoption of colostomy with more radical excision the mortality of carcinoma of the rectum has markedly decreased. However a colostomy is very disagreeable to the patient and the author believes that by the proper use of radium it may be possible especially in the earlier cases to attempt local excision of the tumor without resorting to colostomy and more radical procedures.

In cases of tumors of relatively short duration located in the middle or lower part and on the posterior wall the author removed the coccyx and occasionally a portion of the sacrum opened the rectum on the side of the growth and removed the tumor completely with a margin of healthy tissue around it. He then closed the wound of the rectum transversely and placed radium needles in the meso-rectum as high as possible. He closed the external wound around a small drain. One week later he re-opened the wound removed the radium needles and established free drainage.

In only one case was there any leakage through the wound. Function was completely restored. The only recurrence in the scar developed six months later and was treated successfully with radon seeds.

The author emphasizes that radium should never be used as a substitute for extirpation. He has employed it only in cases in which the patient refused radical surgery or colostomy. The best results he has seen were obtained in cases of epithelioma of the anus occurring in elderly persons. In one case an epithelomatous ulcer was cured by the insertion of radon seeds.

In inoperable cases of carcinoma of the rectum radium irradiation is of special value. Previously much too large doses were employed. At the present time doses up to 6 000 mgm hrs with 1 mm of platinum screening are found most beneficial. Three milligram needles are placed 1 cm apart paralleling the bowel lumen. They are left in place for from a week to ten days. When the needles are removed the wound is left wide open.

To deal with abdominal and pelvic metastases it is necessary to perform a laparotomy. To prevent

the plastic peritonitis which invariably results from the action of radium on the peritoneum it is necessary to wall off the peritoneum from the needles and drain this portion of the abdomen.

The author is now employing radon seeds within the abdomen which saves re-opening the abdomen after a week or ten days.

As a result of the radium treatment the growth becomes smaller, ulceration heals and in cases with successful results the growth disappears entirely.

One of the chief difficulties in the treatment of carcinoma of the rectum with radium is the difficulty of access. Sepsis is responsible for some of the complications.

In conclusion the author says that it is still too early to draw conclusions regarding the end results and that the technique is still in the experimental stage.

ALTON OCHSNER M D

Miller R B. The Rational Treatment of Hemorrhoids. *U S A M J Bul* 1930 xxviii 34

Miller discusses only internal hemorrhoids. He states that fully 50 per cent of internal hemorrhoids can be cured by non operative measures but the latter require special apparatus and a highly specialized technique.

Electrical methods have been used to a limited extent. Desiccation ionization by simple galvanism, galvanopuncture and electrocoagulation have all given good results. The injection of various corrosive substances into the mass has been done with varying success. In this type of treatment the best results have been obtained with quinine and urea hydrochloride.

A review of the many operative procedures leads to a summary of the operations which are most widely used and have stood the test of time—the clamp and cautery operation, ligation with excision and the Whitehead operation. Of these procedures the clamp and cautery method has been used most frequently because of its simplicity and rapidity. The chief objection to it is its liability to be followed by hemorrhage.

Operation is indicated by inflammation, prolapse, ulceration and strangulation of the hemorrhoids and by complicating conditions such as anal fissure, anal fistula and cryptitis.

For small pedunculated hemorrhoids simple ligation and excision is a satisfactory method. For hemorrhoids of moderate size ligation and transfixion with or without preliminary circumcission of the tumor followed by excision is an approved method.

Experience suggests the following rules: 1. Use the open method of operating. 2. Avoid dissections. 3. Perform ligation operations only. 4. Tie before cutting. 5. Avoid the use of crushing clamp pressure. 6. Never divide the sphincter. 7. Prevent the persistence of extensive raw areas. 8. Avoid the transection of blood vessels. 9. Avoid the inclusion of too much tissue in the ligatures. 10. Avoid undue tension in the approximation of wound margins.

11. Avoid the use of a padded rectal tube. 12. Employ mercurochrome before and after the operation.

The author prefers to operate under sacral anesthesia. After discussing the operations of Pennington, Marion, Montague and Hirschman he describes a bloodless operation devised by him. In the latter procedure the mass is prolapsed with the fingers and placed on the stretch by two hemostatic forceps which grasp it near its upper and lower extremities. A slender clamp is then placed on the base of the tumor parallel with the long axis of the bowel and an interlocking chain stitch is introduced beneath the clamp with a Reverdin needle. Each mass is treated in the same way. The stitches are tied and the tumor is excised above the blades of the clamp.

I EDWARD BISHKOP M D

LIVER, GALL BLADDER, PANCREAS AND SPLEEN

M Gowan J P. The Alkali Reserve of the Blood in Relation to the Van Den Bergh Bilirubin Test. *Edinburgh M J* 1930 xxviii 23

Anemic pigs with well marked bilirubinaemia and a lowered alkali reserve gave indirect van den Bergh reactions. By the simple addition of a buffer these reactions were readily made direct. Examination of the livers of the animals showed what was interpreted to be obstructive jaundice.

M Gowan concludes that the direct and indirect reactions are due to the same chemical substance and that the reaction is indirect when the alkali reserve of the blood is diminished. He believes that his findings indicate the extrahepatic origin of bilirubin.

M HENRY BLAZER M D

Fuentes B V, Duomarco J and Munilla A. Liver Glycogen in Icterus from Experimental Obstruction. The Effect of Adrenalin and Insulin. (Glucógeno hepático en la ictericia por obstrucción experimental. Influencia de la adrenalina y de la insulina). *Rev Asoc med argent* 1929 xlii 461

The authors report experiments carried out on white rats, dogs and rabbits which showed that ligation of the common duct causes a marked decrease in the concentration of glycogen in the liver.

In the white rat the glycogen was reduced to one-tenth of its normal value within an hour and a half after the ligation. After six hours none at all remained. From the fourteenth to the forty-fifth day it reappeared but always in very small amounts.

In the dog the glycogen did not disappear completely from the liver after the ligation but fell to very low values.

In the rabbit the glycogen disappeared from the liver completely.

In the cases of dogs and rabbits the liver which had been deprived of all or almost all of its glycogen regained a small part of it when the animals were given large amounts of sugar.

The injection of insulin at the same time that the glucose was given did not favor the accumulation of glycogen in the liver, but interfered with it. The injection of adrenalin which, in normal rabbits is followed by a marked increase in the blood sugar had the same effect in rabbits subjected to ligation of the common duct in spite of the fact that in the latter there was no glycogen in the liver. This fact tends to confirm the theory that adrenalin hyperglycemia is not due altogether to mobilization of the glycogen which has accumulated in the liver.

After ligation of one hepatic duct there was a great reduction of glycogen throughout the liver, but the reduction was most marked in the lobe belonging to the ligated duct. The administration of glucose to rabbits and dogs under such circumstances did not greatly change the amount of glycogen in either lobe.

AUDREY G. MORGAN, M.D.

Ellis J. C. and Dragstedt L. R. Liver Autolysis *in vivo* Arch Surg 1930 xv 8

In the experiments reported the authors attempted to determine the rôle of bacteria in the rapid death caused by liver autolysis *in vivo*. They draw the following conclusions:

1. The uncontaminated liver of a normal healthy adult dog regularly contains a gram positive anaerobic bacillus.

2. It is probable that the experimental so called *in vivo* aseptic autolysis of the liver is always accompanied by this infection and that this is the cause of death.

3. Aseptic autolysis *in vivo* of fetal liver proved sterile by culture does not produce a toxic effect.

JOHN J. MALONEY, M.D.

Waters C. A. and King J. H. The Intravenous Method of Cholecystography and Liver Function Test as Employed in Office Practice *Am J Roentgenol* 1930 xxiii 34

Numerous substances investigated by Graham and his co-workers were found to produce cholecystograms but tetra iodo phenolphthalein and its isomer phenoltetra iodo phthalen proved to be safer than, and superior to the others. The isomeric salt has the advantage of staining the blood serum thereby making it possible to determine hepatic function at the time of the cholecystographic examination if the salt is administered intravenously.

In the determination of liver function 12 ccm of blood are withdrawn one half hour after the injection of the dye. The blood is kept on ice overnight to allow the serum to separate. The percentage of dye in the serum is determined colorimetrically by comparison with standardized solutions of the same dye. A retention of less than 12 per cent of the dye in the blood serum one half hour after the injection and of less than 4 per cent one hour after the injection is considered normal.

Various methods for the administration of the dye have been tried but all except the intravenous and

oral methods have been abandoned. There is now considerable controversy regarding the comparative value of the methods. The authors believe that the intravenous method is superior to the oral method because it introduces a definite quantity of the dye into the circulation the resulting cholecystograms are far superior to those obtained with the oral method and the reactions that occasionally occur are not as alarming as those that may be associated with the oral method.

In the cases reviewed sodium phenoltetra iodo phthalen was used exclusively. Every patient received 7.5 gm. of the dye.

The dye is dissolved in 40 ccm of freshly distilled water and the solution then filtered through fine filter paper and sterilized for twenty minutes in a boiling water bath. The solution should not be more than two hours old.

The apparatus which is shown in an illustration, keeps the solution at body temperature and facilitates its introduction by the gravity method. After the needle is introduced into the vein 50 ccm of normal saline solution are given first. The dye is then administered slowly each 10 ccm being followed by 20 ccm of the saline solution. This procedure seems to prevent disagreeable reactions. The injection is usually given in the afternoon. The patient is permitted a hearty noon meal free from fats. After the injection no food is allowed except water plain tea or coffee. The examination is made the following morning. After satisfactory cholecystograms have been obtained the patient is given a meal rich in fat and two hours later is examined again.

The roentgenograms must be taken with the shortest possible exposure and the use of the Bucky diaphragm. With the intravenous method lateral and oblique views can be obtained. Just before the roentgenograms are made a warm water enema is given routinely to rid the colon of gas.

Disagreeable reactions following the intravenous use of the dye in the authors' cases were headache, chilly sensations, erythema, urticaria and venous thrombosis. Venous thrombosis occurred only once. The reactions with the oral method were nausea, vomiting, diarrhea, abdominal cramps and headache.

The contra indications to the use of the dye are cardiac decompensation, abnormalities of blood pressure and threatened uræmia.

Of a series of ninety six cases a laparotomy was performed in eleven and verified the cholecystographic diagnosis in ten. In the one case in which the cholecystographic diagnosis was not verified the normal sized gall bladder which was very faintly visible in the cholecystogram was believed to be pathological but operation revealed only adhesions about the cystic duct and microscopic examination of the gall bladder after its removal showed no disease.

Of a series of fifty seven cases the cholecystographic diagnosis agreed with the clinical impression

in fifty six. One case was examined to determine whether a shadow was due to a renal calculus or a gall stone. The gall bladder was not visualized and the stone was found in the kidney. The gall bladder was not explored at operation.

Of thirty nine cases in which the liver function test was carried out the test was normal in nineteen. In seven cases it was above normal in the absence of demonstrable gall bladder disease. Of twenty one cases with hepatobiliary disease it was above normal in ten and normal in eleven. In eleven cases in which a laparotomy was done the highest retention was 22 per cent. In all of these cases a good recovery resulted.

Graham Cole and Copher believe that the operative risk and the time for operation in hepatobiliary disease may be determined from the liver function test. According to their experience a very high retention indicates a poor operative risk.

In the discussion of this report CASE (Chicago) stated that he had given the dye intravenously for cholecystography in about 4500 cases and favors this method. He allows the patient to eat a heavy meal after the injection provided it is restricted to carbohydrates. If any of the dye leaks into the tissues the injection in that vein is stopped and the perivascular tissue is infiltrated with normal salt solution.

MOORE (St. Louis) reported that he also had obtained the best results with the intravenous administration of the dye described by Waters.

MONROE (Philadelphia) asked Waters if he had tried half as much dye as he advocated. Waters replied that he had not but thought it would act as well and might show negative stone shadow which would be missed by the use of larger doses.

CRANE (Kalamazoo) stated that the use of the intravenous method can be restricted to a comparatively small percentage of cases, i.e. those in which the oral method has failed to give a satisfactory cholecystogram.

NEWELL (San Francisco) stated that in his opinion the gall bladder should be empty at the beginning of the test. It is therefore his practice to give a glass of milk and cream three or four hours before the test. He inquired whether the new isomer is less apt to cause soreness of the arm. Waters replied that soreness of the arm resulted in one of ninety six cases. In that instance a thrombosis occurred in a collateral vein about 4 or 5 in. from the location of the injection.

STEWART (New York City) said that he had used the oral method in about 5000 cases and had never been disappointed in it. He employs the intravenous method when a test of liver function is to be made.

WATERS in closing the discussion expressed the hope that his colleagues would substitute the intravenous method of cholecystography for the oral method because of the more satisfactory results which can be obtained with the former.

J. EDWIN KIRKPATRICK, M.D.

Sutton J. F. Jr. Changes in the Intrahepatic Bile Ducts Following Cholecystectomy. *Iowa Surg.* 1930 xci 65.

Sutton found that removal of the dog's gall bladder produced striking changes in the epithelium of the intrahepatic bile ducts. The low columnar epithelium is transformed into high columnar cells with folds and villi covered with these cells projecting into the lumen of the ducts. The beginning of the change is demonstrable fifteen days after the cholecystectomy and forty days after the operation the changes are well advanced. The picture presented by the duct epithelium forty days after the removal of the gall bladder is that of an exaggeration of the folds projecting into a gall bladder and the epithelial cells and their arrangement resemble those of the normal gall bladder to a remarkable degree. The parietal sacculi enlarge following cholecystectomy and their epithelial cells undergo the same changes as those in the intrahepatic ducts.

CARL R. STENZKE, M.D.

Charbonnel and Augier. A Large True Cyst of the Pancreas Disappearing Completely at Times. (*Gros kyste vrai du pancréas disparaissant complètement par intermittences.*) *Bull. et mém. Soc. nat. de chir.* 1929 li 128r.

The patient whose case is reported was a woman twenty five years of age who presented a tumor of the left hypochondrium which was the size of a fetal head resistant to dull and irreducible. It had reached this size within a few days and caused respiratory disturbances and pain. The patient complained also of constipation. There had been no eructations, vomiting, diarrhea or abnormal emission of gas. The skin showed traces of erythema due to heat therapy which had been advised by the attending physician who had diagnosed the tumor as an enormous cold abscess from congestion the origin of which he judged to be dorsal lott's disease because of the presence of slight scoliosis and intercapular pains. The tumor had disappeared and returned just before the patient was seen by the authors.

Exploratory puncture seemed contra-indicated. Roentgen copy showed a rounded dark mass in the left hypochondrium. After a barium meal the stomach appeared very narrow in the median portion as it were compressed and pushed back to the right by the mass. A diagnosis of abscess from congestion perhaps of vertebral origin but more probably of pleural origin was made and the patient told to return the next day for an exploratory puncture. However when the patient returned she felt better the tumor had disappeared. The epigastrium and left hypochondrium were absolutely supple and flat and roentgen copy the round and obscure mass in the hypochondrium could no longer be seen.

Two months later the phenomenon recurred. The cause of the possibility of disturbances of gastric evacuation or aerophagy, medical treatment and the ventral position were used. In spite of this the tumor increased in size for six or eight days and there

was pain which became more acute until the disappearance of the mass, which occurred within a few hours. Capillary puncture withdrew from the tumor 10 ccm of a very viscid stringy grayish white fluid resembling saliva. This fluid was not acid. It was free from reducing sugars, bile pigments and urobilin but contained small traces of albumin chorides (0 per cent) and a large amount of peptones. The authors diagnosed the tumor as one caused by gastric dilatation periodically blocked by atrophagy and excessive sialophagy in a nervous woman. However gastric intubation done the same afternoon obtained only 10 ccm of fluid. Two or three minutes later the patient said 'It's going away' and without any abnormal noise the tumor disappeared.

When the phenomenon recurred for the third time the symptoms were aggravated. During a period of forty-eight hours the patient passed blood in the urine. The swelling lasted longer and was larger and more resistant than before. Biliary vomiting occurred for the first time. Day thought it highly improbable that the neoplasm was in the kidney. Another roentgenoscopic examination showed a tumor coming from the deeper regions which pushed the stomach forward flattening it against the abdominal wall. Only the fundus and pyloroduodenal region escaped the compression.

Laparotomy revealed a large cystic mass distending the gastrocolic omentum and pushing the stomach forward and to the right. A brownish viscid liquid to the amount of 250 liters was withdrawn by puncture. Intracystic hemorrhage had occurred at the bottom of the pocket and closely attached to it was the tail of the pancreas. On the internal wall there were small translucent cysts of the size of poppy seeds (not at all like hydatid vesicles). Because of extensive adhesions only two thirds of the pocket could be extirpated. The rest was marsupialized. In the resection of the portion of the pocket at the level of the tail of the pancreas a series of intrapancreatic cysts containing a clearer less viscid fluid were opened. These seemed to be continuous with the tail of the pancreas although the visible part of the latter was not polycystic.

Specimens for histological examination which were taken from three different areas of the pocket (one in the region of the microcysts) showed a collection of cysts in a wall containing traces of enteroid tissue. The epithelium of the covering of the cysts was composed in some areas of tall cylindrical cells and in others of flattened crenated cells. There were numerous small cysts separated by thin walls of connective tissue showing lymphocytes. No indication of malignant transformation was noted. The mucosa of the micrometastasis preparation showed a few cells which were clearly muciparous but no such cells were found in the microcysts. The fluid of the large cyst showed a weak mucus reaction but that of the small cysts had none at all.

The immediate results were good and the patient left the hospital with a small drain in place on the

twenty fifth day. She gained 5 kgm but lost them again and six months later replacement of the drain was necessary on account of retention of pus.

Charbonnel and Augstrou conclude that this was a case of true cyst of the pancreatic gland with epithelial covering a cystic adenoma. They point out a relationship between the enteroid appearance of the epithelium of the cyst and that of mucoid cysts of the ovary which by many are thought to be enteroid tumors. As the cyst was not entirely extirpated it will probably recur. To explain the complete clinical disappearance of the tumor the authors suggest that the cyst had an opening into a pancreatic canaliculus and from there into the pancreatic duct and that this communication became obliterated entirely when there was no tension.

In the discussion of the report BRECHOT said that he had observed a case with analogous symptoms. After two disappearances of the cyst he operated and found a pancreatic pseudocyst which under tension broke its barriers and caused an effusion into the peritoneal cavity.

OMBREDANNE suggested the possibility of cystic lymphangioma adjacent to the pancreas in cases with a deep abdominal tumor which disappears and reappears.

BROCCO who read the report of Charbonnel and Augstrou before the Society replied that in the case under discussion the diagnosis of true cyst of the pancreas was clearly supported by examination of the cyst wall and the intimate relationship between the tail of the pancreas and the wall of the cyst.

PAGE

Bailey H. Spontaneous Rupture of the Normal Spleen. *Bull J Surg* 1935 xvii 41

The author reports a case of spontaneous rupture of the spleen and reviews eleven other cases from the literature.

Bailey's patient a man twenty years of age was suddenly seized with pain in the abdomen and left shoulder while he was sitting in a chair. His temperature then rose to 101 degrees F and his pulse rate to 100. Examination revealed generalized abdominal tenderness. This was maximal in the right hypochondrium where rigidity was also found. Laparotomy disclosed a large amount of free blood. Splenectomy was performed. A subcapsular hematoma had ruptured.

In conclusion Bailey states that in atraumatic hemoperitoneum in the male the spleen should be examined first.

AL HERBERT BARKER M D

Duval P. Severe Hematemesis with Splenomegaly Splenectomy. A Large Sclerotic Spleen with Thrombosis of the Splenic Veins. Recovery (Hématémèses graves avec splénomégalie splénectomie grosse rate sclérosée avec thrombose des veines spléniques guérison). *Bull et mém Soc nat de chir* 1929 lv 1293

Duval reports the case of a woman twenty-eight years of age who entered the hospital because of

severe hæmatemesis melæna weakness vertigo and headaches For several years she had had digestive disturbances 'sour stomach' and a feeling of weight in the abdomen after meals A diagnosis of hyperchlorhydria had been made A month before she entered the hospital blood had suddenly appeared in the urine twelve hours after she had taken a purgative and the same day she vomited blood four times The vomited blood was dark and contained large clots The hæmatemesis was followed by melæna and the passage of black feces with a foul odor The attacks of weakness sometimes terminated in loss of consciousness

On examination at the hospital the patient was found to be very anæmic The spleen was large the lower pole being at the costal margin and the dullness extending up to about the fifth rib in the axillary line It was hard but not irregular A diagnosis of hæmatemesis of splenic origin with splenomegaly from incipient Banti's disease was made

After treatment to combat the anæmia splenectomy was done The large veins of the pedicle of the spleen seemed completely thrombosed

The operation was followed by uninterrupted recovery Three months later the patient was in very good general condition and the red cell count was 4,020,000 as compared with the pre-operative count of 2,800,000

Histological examination of the spleen showed chronic obliterating splenophlebitis sclerosis and interstitial hæmorrhages

Because of the present tendency to place sclerosis of the spleen with thrombosis of the splenic veins in a special grouping Duval hesitates to call this a case of Banti's disease

PAGE

Desplas B Calin A and Peyre E Banti's Disease Splenectomy Recovery Late Results (Maladie de Banti splénectomie guérison résultats éloignés) *Bull et mem Soc nat de chir* 1929 14 346

The case reported was that of an extremely corpulent man with thoracic respiration who for 15 years had had vague symptoms consisting of slow digestion and a permanent feeling of weight in the right hypochondrium and three years ago had noted an increase in the size of the liver In the last eighteen months he had had four hæmorrhages from the intestine and several attacks of epistaxis A diagnosis of mitral lesion had been made and treatment with digitalis had been given

When the patient was examined by the authors he was extremely pale and weak The abdomen was flexible and free from ascites and collateral circulation The liver was enlarged but signs of portal hypertension were absent The spleen was greatly enlarged and very hard but painless It extended from the level of the umbilicus to the fifth rib The splenic dullness occupied the external half of Traube's space Adenopathies hæmorrhoids and purpura were absent The blood picture showed marked anæmia and leucopenia The multiple cardiac souffles were interpreted as anæmic souffles

and a diagnosis of splenomegaly with anæmia was made Banti's disease in the cirrhotic stage was feared

After two blood transfusions had been given splenectomy was performed Because of the patient's corpulence and thoracic respiration and because of the thoracic development of the spleen great difficulty was encountered In order to deliver the spleen it was found necessary to resect the cartilaginous portion of the lower ribs While abdominal respiration was induced by traction on the tongue Desplas delivered the upper pole When once the spleen was out of the abdomen the operation proceeded smoothly

Convalescence was interrupted by subacute osteochondritis pulmonary congestion œdema of the legs decubitus on the buttocks and a temperature of from 38 to 39 degrees C Blood transfusion was followed by improvement At the end of two months the various complications had cleared up except for serous suppuration in the region of the wound which was found to have its origin in the seventh eighth and ninth ribs Small sequestra were eliminated Two months later the infected fragments of rib and cartilage were removed The patient left the clinic in excellent condition with a normal blood formula Two years after the splenectomy he presented no sign of the disease

Examination of the extirpated spleen showed uniform enlargement and hardening and a slight perisplenitis There was marked sclerosis of the capsule pulp trabeculae and vessels The sclerosis was of the adult non-infiltrating type The fine reticular network of the sinuses was replaced by thick collagenous filaments which were poor in cells The sinusoid cells were small and contracted around their nuclei No macrophage reaction hæmorrhage focal or pigmented or hæmatic inclusions were noted The red pulp was greatly hypertrophied but the red pulpules of Malpighi were not appreciably changed Numerous mononuclear cells and eosinophiles were seen but no polymorphonuclears or plasma cells In every respect the spleen resembled the spleen of Banti's disease

The condition of the blood at various dates is shown in a table Two years after the splenectomy the anæmia had completely disappeared the leucocyte count was slightly increased (increase of lymphocytes) and the serum was practically normal

FLORENCE A CARPENTER.

MISCELLANEOUS

Ritvo M Hernia of the Stomach Through the Oesophageal Orifice of the Diaphragm *J Am W As* 1919 xciv 15

Ritvo defines hernia of the oesophageal orifice as the protrusion of a portion of the cardia of the stomach through the oesophageal opening of the diaphragm into the thorax This type of diaphragmatic hernia was formerly considered very rare but with the increasing use of the roentgen ray in

the examination of the gastro intestinal tract, it is being found with increasing frequency. In the last decade several large series of cases have been reported.

The author reports 60 cases, all diagnosed during the routine roentgen examination of the stomach with the opaque meal in a period of five years during which time about 8000 gastro intestinal cases were studied roentgenologically.

Enlargement of the oesophageal orifice of the diaphragm with resultant herniation of the cardia may be congenital or acquired. The acquired cases are due to increased intra abdominal tension plus some unknown factor which accounts for the occurrence of the herniation through the oesophageal hiatus rather than at one of the more common sites of hernia.

Of the 60 patients whose cases are reported by the author, 41 were females. The ages varied from twenty-one to seventy two years. The majority of the patients were over forty years old. Fourteen patients had no symptoms referable to the hernia. The most common symptoms were epigastric pain, heartburn, nausea, vomiting, regurgitation and constipation. As a rule the symptoms were rather indefinite, mild, and of long duration. The most typical complaint was a feeling of weight or pressure under the xiphoid process coming on during or soon after eating and relieved by a hot drink or by walking about for a few moments.

Small hernia cause no physical signs, whereas large hernia may suggest pneumothorax or hydrothorax. Roentgen examination is usually the only means of arriving at a diagnosis. Very careful studies are essential to demonstrate the lesion. Fluoroscopic observations with the patient in the prone, supine and oblique positions must be made as the hernia is rarely seen in the erect position.

After the ingestion of the opaque meal the hernia is manifested by a round or ovoid shadow just above the diaphragm. It lies in or near the median line usually to the left of the oesophagus. As a rule it connects with the stomach by an isthmus at the level of the oesophageal orifice. It must be differentiated roentgenologically from diaphragmatic hernia of other types, diverticulum of the oesophagus and stomach, cardiospasm, cardia oesophageal relaxation and eventration. The treatment consists mainly of dietetic and preventive measures. Surgical operation is indicated only if the symptoms are severe.

MANUEL L. LICHTENSTEIN, M.D.

Bobrov V. Inflammatory Diseases of the Retroperitoneal Cellular Tissue of the Duodenum, Pancreas and Gall Bladder and the Avenues of Escape for Fluids from These Regions (Entzündliche Erkrankungen des retroperitonealen Zellgewebes des Duodenums, der Pankreas und der Gallenblase und die Abflüsse Wege der Flüssigkeiten aus diesen Abschnitten). Verhandl. d. 20. russ. Chir. Kong. Moskau 1923 1929.

In studies on the cadaver the author found that the duodenum and the head of the pancreas are sur-

rounded by a connective tissue sheath which is closed below and opens on the right toward the right kidney. All injected fluids escape from the duodenal region toward the right, in front of the right kidney, and spread into the so called paracolon layer. They flow around the hepatic flexure of the colon, the ascending colon and the cæcum, sink into the pelvis along the ureter and hypogastric vessels as far as the bladder and extend along the external iliac artery to the femoral canal. Externally the boundary line extends to the reflection of the peritoneum and internally to the left border of the aorta where there are rather dense adhesions of the peritoneum to the vessels, nerves and lymphatic organs. Inferiorly, it extends along the mesocolon into the pelvis and above it goes behind the descending portion of the duodenum. The right and left layers are not strictly separate above. In a few of the author's experiments injected plaster or gelatin went over to the left side and spread behind the descending portion of the colon sometimes into the left iliac fossa, sometimes to the inner opening of the femoral canal and some times into the para ureteral layer.

Bobrov emphasizes the inconstancy and weakness of the preperitoneal fascia. In 80 per cent of his experiments the gelatin mass broke through it and then filled the right or, less often the left paranephron and farther downward the retroperitoneal layer.

Clinical observations on the extension of pus, blood and intestinal contents correspond exactly with the author's findings in the cadaver.

Bobrov describes also several clinical observations of retroperitoneal hemorrhages and suppurations arising from the duodenal pancreas and gall bladder. He comes to the conclusion that suppurative processes of the retroperitoneal cellular tissues having their origin in the pancreas and gall bladder infect the paracolic tissues and often lead to infection of the fatty capsule of the right kidney. These infections usually occur on the right side but occasionally extend over to the left side. Such suppurations are serious. As a rule they lead to peritonitis although in some cases they run a chronic course. Kocu (C).

Wilkie D. I. D. Some Principles in Abdominal Surgery. Surg., Gynec. & Obst. 1930 1 129.

Wilkie emphasizes that a guiding rule in the surgery of the abdomen should be the avoidance of traction and tension. Incisions in the abdominal wall should be so planned that they will give the freest possible access to the site of disease without the use of forcible retraction. Retractors should be employed only to retain out of the surgeon's way tissues which have been gently pushed aside.

The surgeon should deal only with the mobile organ. If the organ to be operated upon is immobile, it should be mobilized. Mayo has shown how a generous mobilization of the proximal colon may always be effected so as to render resection of a large section both simple and safe. Other portions of the gut such as the duodenum, the splenic flexure and the descending and iliac colon are equally amenable to

mobilization Mobilization is especially important in splenectomy.

Most abdominal pains excluding those due to irritation of the parietal peritoneum are due either to spasm of or tension within the hollow viscera. An especially important form of intra abdominal tension is that of acute obstruction of the appendix a condition in which timely operation can remove threatening danger whereas delay of operation means rupture with the development of peritonitis that often is fatal.

Complete examination of the various abdominal viscera at operation is necessary in order that other gross pathological lesions may be attended to or excluded. The frequent association of lesions of the appendix, duodenum and gall bladder is well known.

In the surgery of the abdomen as in that of other regions it is often not only desirable but also necessary for success to operate in two stages. In the acute crisis of disease the immediate operative incision is clearly the minimal procedure that will give relief and save the patient's life. The length of the interval between the preliminary procedure and the radical operation must be determined according to the requirements of the particular case.

JOHN W. NUTZ, M.D.

Ehler, F. Surgical Complications of Chronic Inflammation of the Mesentery (Chirurgische Komplikationen bei chronischer Mesenterialentzündung). *Chir. Wk. Wsch.* 1939 v. 81:30.

Chronic inflammation of the mesentery is a rather rare surgical condition. It usually runs a slow chronic course with no particular subjective symptoms and becomes manifest only because of its sequelae: cicatrization and shrinkage which lead to kinking and obstruction of the bowel. Only the intramesenteric connective tissue is involved in the

inflammation never the peritoneum. The ileocecal and sigmoid regions are effected most frequently. The most common cause is inflammation of the mesenteric lymph glands which is usually due to tuberculosis but sometimes is the result of other infections. Other causes are acute and chronic appendicitis, cholelithiasis, subcutaneous trauma and embryonic abnormalities in the development of the mesentery.

On the basis of the symptoms three phases may be distinguished. In the first phase the etiological factors—inflammation of lymph glands, traumata and large herniae requiring frequent reduction—dominate the picture. In the second phase in which scars and bands are formed in the mesentery there are vague pains in the abdomen associated with meteorism and tenderness. In the third phase there are evidences of acute obstruction which bring the patient to operation. Most often there is a volvulus of the flexure caused by narrowing and plication of the mesenteric attachment.

The author reports four cases. In the first, which was fatal, catarrhal inflammation of a persistent Meckel's diverticulum led to inflammation of the lymph glands followed by inflammation of the mesentery with shrinkage which resulted in kinking of the small bowel and ileus. In the second case there was a volvulus of the flexure from contraction of the mesentery and cure was effected by permanent colostomy. The author attributes the inflammation in this case to an obstinate constipation. The third case was identical with the second. In the fourth case there was mesenteritis of a jejunal loop which caused kinking. Enterostomy was followed by recovery. The inflammation of the mesentery was attributed to a bilateral scrotal hernia requiring frequent reduction. The herniae were repaired two years before the attack of ileus. (Z)

GYNECOLOGY

UTERUS

Douay An infected Chorionepithelioma Four Year Cure Following Vaginal Hysterectomy (*Chorion-épithéliome infecté hystérectomie vaginale guéri-on après 4 ans*) *Bull Soc d obst et de gynéc de Pa* 19 9 xviii 686

Douay reports a case of severe hæmorrhage and sepsis following diagnostic curettage in a case of chorionepithelioma developing after hydatid mole. Vaginal hysterectomy performed one week later resulted in rapid convalescence and a four year cure. On the basis of this experience, Douay advises immediate hysterectomy in all cases in which chorionepithelioma can be diagnosed clinically. Aside from the fact that it is associated with the danger of uterine perforation and sepsis, curettage is unsatisfactory because it may fail to reveal malignant areas.

In the discussion of this report, STREDAY cited a case in which uterine perforation occurred.

HAROLD C. MACK, M.D.

Bédère A Uterine Sarcoma and Roentgenotherapy (Sarcome de l'utérus et roentgénothérapie) *Bull Soc d obst et de gynéc de Par*, 1929 xviii 683

Bédère reports a case of uterine sarcoma developing in a woman fifty nine years of age who had passed the menopause ten years previously. The tumor reached the size of a full term pregnancy. X-ray therapy was followed by rapid regression of the neoplasm at the rate of 1 cm. per day to complete disappearance for five months. Ten months later death occurred from vertebral metastasis.

In the discussion of this report, FAURE and DOUAY emphasized the difficulty of diagnosing sarcoma both clinically and histologically, and advised surgery for all doubtful and operable cases.

STREDAY reported another case of remarkable though only temporary benefit following irradiation. Because of the possibility of sarcomatous degeneration of uterine fibroids he advised operation in all cases in which these tumors enlarge after the menopause.

HAROLD C. MACK, M.D.

ADnexAL AND PERIUTERINE CONDITIONS

Fels E. Experimental Studies of the Physiology and Biology of the Sex Hormone Carried Out on Parabiotic Animals (Experimentelle Studien an Parabioten Tieren ueber Physiologie und Biologie der Sexualhormone) *Arch f Gynaec*, 1929 cxix 151

The experiments reported by Fels were made on seventy three parabiotic pairs of animals, fifty three of which lived longer than ten days. Among those that died earlier are included, of course, those that

were killed for the purposes of the experiment. In most of the experiments (sixty three) rats were used, and in the others mice or rabbits. The animals were joined by the abdominal cavities (coeliac anastomosis).

When animals of the same sex were united the parabiosis had no effect on the generative glands or sex function as evidenced in female animals by the vaginal cycle, uterus, ovaries and hypophysis and in male animals by the testicles and secondary sex characteristics. The failure of the estrual cycle in one female animal to affect the other is due to the fact that very large amounts of hormone are necessary to cause oestrus in the parabiotic partner. The ovum is not to be regarded as the chief factor regulating oestrus. The differences in the estrual condition of the vaginal mucous membrane of the two parabiotic animals are shown clearly in illustrations. Glands of internal secretion which are closely related to the generative glands, such as the hypophysis and adrenals, also remained unaffected.

In parabiosis of males and females the testicles always degenerated whereas the ovaries failed to show even microscopic changes. When the degeneration of the testicles was marked the hypophysis also showed the changes characteristic of castration. These findings support the theory of an antagonism between the male and female sex hormones and indicate that the female sex hormones are biologically the stronger. The fact that some investigators have reported persistence of procreative ability and have denied testicular degeneration is explained by the assumption that when the ovary of the female partner shows no ripening of the follicles it does not produce the hormone which causes the degeneration.

In parabiosis of a normal with a castrated animal the results were the same whether the castrated animal was a male or a female. In Fels' experiments fourteen males and fifteen females were united to castrates. In the normal male united to a castrated animal of either sex the genitalia became hypertrophied. In the normal female the changes consisted of precipitate ripening of the follicles with the usual secondary effects on the uterus—an increase in the size of the uterine lumen, complete obliteration of the mucosal folds, a decidual reaction of the connective tissue cells and occasionally stasis of secretion with secondary infection. The castrated parabiotic partner was not affected by the sex hormone of the normal animal, only occasionally were proliferative changes observed in the vaginal epithelium. The hypophysis and internal genitalia always showed the changes characteristic of castration. Accordingly the supply of hormone from the normal animal to the castrated parabiotic

animal was sufficient for only the beginning of oötral proliferation of the vaginal epithelium and not sufficient to prevent the castration atrophy of the uterus. The hypophysis of a castrated female in parabiosis with a normal female retained the characteristics of castration. The cause of the changes in the genitalia of the normal animal in parabiosis with a castrated animal is the hormone of the anterior lobe of the hypophysis of the castrated animal. The hormone of the anterior lobe of the hypophysis enters the parabiotic partner more easily than the sex hormone. This observation may be of practical importance as it may indicate that very small amounts are necessary for the effect noted or that the hormone of the anterior lobe of the hypophysis is not excreted so quickly. The author rejects the theory of a castration hormone as the cause of castration changes. Even though these changes in the castrated parabiotic animal can be stopped or compensated for by the administration of sex hormone the hypertrophic changes in the ovaries of the normal animal cannot be explained. More probable is the theory that the hormone of the anterior lobe of the hypophysis which has become useless in the castrated animal goes over into the other animal and there exerts its effect on the generative glands which lack the protect on against an excess of hormone such as is present for example in pregnancy.

Evidently the hypophyseal reaction is produced relatively easily in a parabiotic animal. Fels proved this by demonstrating that in female parabiotic animals the administration of sex hormone to one animal caused oöstrus only in that animal whereas the administration of hormone of the anterior lobe of the hypophysis caused oötral changes in both animals. It was demonstrated also by the fact that in an experiment in which one of the parabiotic animals was still immature (weighing 65 gm) the normal animal showed the changes in the ovary. The theory of functional capacity of the infantile hypophysis is therefore again confirmed by the findings of parabiotic studies.

To judge the effects of parabiosis on conception and the course of pregnancy it is necessary to differentiate the effects due to the surgical operation itself and those due to the condition of the specific glands of internal secretion produced by the parabiosis.

The author's conclusions which confirm the observations of earlier investigators are summarized as follows:

Conception and pregnancy can occur in (1) parabiosis between two females because in such parabiosis the sex functions remain unaffected and (2) in parabiosis between males and females only after complete degeneration of the testicles. In parabiosis of two females a pregnancy already existing can go on to term whereas in parabiosis of a female and a male animal it will be interrupted by the antagonism of the sex hormone if the testicles of the male are still functioning. Conception and pregnancy cannot occur in parabiosis with a castrated animal because

the hormone of the anterior lobe of the hypophysis of the castrate causes unphysiological conditions of the genitalia of the normal animal. For the same reason an already existing pregnancy in this parabiotic combination cannot be carried to term unless it is far advanced. Uterine contractions in the non-pregnant parabiotic animal during the labor of its partner have never been observed. Therefore the theory of the formation of a toxin during labor is to be rejected. Pregnancy in one of the members of the parabiosis causes no changes in the reaction of the other animal whether the latter is a male, a female or a castrate. In interruption of an early pregnancy there is involution of the ovum with slight hemorrhage from the vagina whereas in interruption of a more advanced pregnancy the embryo dies and is expelled.

FLESCU (G)

Murard J. Peritoneal Inundation from the Rupture of a Menstrual Corpus Luteum (Inondation péritonéale par rupture d'un corps jaune menstruel). *Bull et mém Soc nat de chir* 1939 15: 1134.

The case reported was that of a married woman twenty-one years of age who consulted the author because of subacute abdominal pain persisting after an attack of severe diffuse pain in the abdomen which had awakened her the previous night. The pain was not associated with vomiting. Since the attack, no stools and only a slight amount of gas had been passed. Menstruation had occurred fifteen days previously. This was the third attack of the kind. Both of the preceding attacks occurred at the time of menstruation the first four years previously and the second three years previously and both had been attributed to appendicitis.

At the time of her examination by Murard the patient was slightly pale. The abdomen was flaccid and free from meteorism but pain was present on the right side below McBurney's point. The pulse was 100 and the temperature 37.5 degrees C. A diagnosis of appendicitis was made.

At operation the peritoneal cavity was found full of bright blood. The origin of the hemorrhage was an orifice in the median portion of the free edge of the right ovary. The appendix was slightly swollen and very vascular. The right ovary and the appendix were removed. Recovery was uneventful.

Histological examination of the ovary revealed a menstrual corpus luteum and a small graafian follicle. No fetal elements were present. The bleeding was evidently a hemorrhage of the corpus luteum.

Exclusive of those associated with pregnancy intraperitoneal hemorrhages of ovarian origin may be classified into three groups according to the stage of ovulation: (1) those occurring during maturation of the follicle which are very rare; (2) those occurring during ovulation which are also rare; and (3) those occurring during the evolution of the menstrual corpus luteum. Murard quotes Besançon on this subject. With the exception of cases in which there is a history of traumatism or a

predisposition to hæmorrhage the cause is completely unknown

PAGE

were no leading symptoms or gross signs of malignancy

CARL H DAVIS M D

D Allaines F An abscess of the Corpus Luteum Rupturing into the Free Peritoneal Cavity Pneumococcal Peritonitis (Abscs du corps jaune rompu en péritonée libre, péritonite à pneumocoques) *Bull et mém Soc nat de chir*, 1929, lv 1372

The patient whose case is reported was a girl seventeen years of age who was suddenly seized with very severe abdominal pain followed by vomiting. About eight or ten days before she had had a slight sore throat. She had menstruated twelve days before.

When she was seen by the author her temperature was 39.5 degree C and her pulse 120. The pain was most severe in the infra umbilical region. Bilious vomiting had occurred two or three times. The abdomen was flat, but there was respiration only in the upper half. On palpation the supra umbilical region was flexible and almost painless. The whole infra umbilical abdomen was contracted rigid and violently painful on palpation. There was cutaneous hyperæsthesia. Rectal palpation revealed sensitive areas in the pouch of Douglas. A diagnosis of acute peritonitis was made and the patient removed to the hospital. Her temperature increased to 40 degrees C, her pulse to 130, and her respiration to 32. Vomiting occurred twice and the contracture and pain extended upward above the umbilicus.

At operation the abdominal cavity was found to contain about 250 c.c. of thick pus of a chocolate color. This was especially abundant in the pelvis. The right ovary was of the size of a mandarin orange and presented a jagged orifice from which issued pus of the same nature as that in the pelvis. The ovary was resected between two ligatures. Recovery ensued.

The initial pain, the solitary localization in the corpus luteum, and the integrity of the tube indicated that the abscess was metastatic. Direct examination as well as culture of the pus showed pneumococci.

The specimen removed was a very voluminous ovary, the greater part of which was formed by an irregular, anfractuous cavity with an irregular fissure. Sections of the ovary showed that the fissure was the site of a corpus luteum which had abscessed and broken. An infiltration of polynuclears extended among the cellular elements of the corpus luteum to the immediate periphery of the latter but did not touch the remainder of the ovarian parenchyma.

The author cites similar cases from the literature.

PAGE

Fleming A M Clinical and Pathological Report on Three Unusual Ovarian Tumors *J Obst & Gynec Brit Emp* 1929 xxxi: 793

The three tumors described were of the fibromyomatous type but were permeated by small masses of epithelioid cells. They were found more or less accidentally. The clinical histories show that there

EXTERNAL GENITALIA

Huhmann C F Simple Round Ulcers of the Vagina *Am J Obst & Gynec*, 1929 xviii 832

The simple round ulcer of the vagina is a rare lesion. It has been observed only once in 4,666 cases admitted to the gynecological service of Lane Hospital San Francisco. The age incidence is known for only 14 of the 18 reported cases. All but 3 of the patients were over forty years old and 4 of them were over sixty.

There is apparently no connection between this lesion and other pelvic disease, but in a case reported by Beuttner a small uterine fibroid and a cervical polyp were found. In several cases general systemic conditions were present. In 1 of Zahn's cases the patient died with a contracture of the extremities and aphasia which had confined her to a hospital for six years. Both of Beuttner's patients had cardiac disease and in 1 of them autopsy disclosed in addition an ulcer of the duodenum and ecchymotic erosions of the large intestine. Browicz patient had a croupous pneumonia. Zahn's second patient endocarditis and chronic pulmonary tuberculosis. 1 of Braithwaite's patients general asthenia and Thomson's first patient and 1 of the author's a marked secondary anemia.

The ulcer is a chronic lesion. In most cases there are few or no associated symptoms but in some the ulcer may cause leucorrhœa and bleeding. It is generally painless, but manipulation may elicit tenderness. It is characteristically round or oval. Its edges are even and sharply demarcated but show no undermining. The lesion is very shallow. There is no surrounding induration. On palpation it may be missed altogether. The base is usually smooth and reddened. It may have the appearance of granulation tissue or may be covered by a fibrinous or purulent exudate. The surrounding vaginal mucosa appears normal, although Zahn's second case showed extensive ecchymosis and hæmorrhagic erosion in 1 of Veit's cases there was senile vaginitis and in the author's first case there were fine punctate hæmorrhagic spots in the vault of the vagina.

Of 13 cases in which the site of the ulcer is known the lesion occurred on the posterior vaginal wall in 11, on the anterior wall in 1 and on the lateral wall in 1. In 6 cases it was just to the left of the midline on the posterior wall. According to Beuttner its frequency at this site is due to the fact that this is where the secretions from the cervical canal are poured out.

The lesion is usually single, although in 1 of the author's cases there were 2 ulcers. In Browicz case there were 8 in 1 of Braithwaite's cases there were 4 or 5 which gradually coalesced and in Kaufman's case there were a large number of areas of necrosis.

E L CORNELL, M D

MISCELLANEOUS

Asherson N The Relation of Dosage of Radium to Age in the Production of Amenorrhœa *J Obst & Gynaec Brit Emp* 1929 xxxvi 778

The author reviews the results in the cases of ninety-eight women between the ages of twenty-one years and the menopause who were treated with radium to produce amenorrhœa.

He postulates that in the case of patients between puberty and the menopause who have a normal sized uterus the younger the patient the larger the milligram hour dose of radium necessary to produce amenorrhœa.

In not one of eighty cases of menopausal menorrhagia treated with radium did carcinoma of the cervix supervene. The author therefore suggests that in the use of radium to hasten the menopause we may have a prophylactic measure against carcinoma of the cervix.

Attention is drawn to certain sequelæ following the administration of large doses of radium irradiation.

CARL H DAVIS M.D.

Loeser A The Treatment of Chronic Gonorrhœal Infections in the Female by Subcutaneous Injections of Living Cultures of Gonococci (Le traitement de la gonorrhée chronique de la femme par les injections sous cutanées de cultures vivantes de gonocoques) *Bull Soc d'obst et de gynéc de Par*

1929 xviii, 603 *Rev franç de gynéc et d'obst* 1929 xxiv, 732

The treatment of chronic gonorrhœal infections of the female genital tract (endocervicitis salpingitis) by the subcutaneous injection of living gonococci has been carried out by the author in 1500 cases without detrimental effect and with cure in from 60 to 70 per cent. The injection produced a purely local reaction and never resulted in septicæmia. With the exception of arthritis acute infections are not benefited nor are chronic infections involving the rectum urethra and the glands of the vulva.

The organisms obtained from a case of acute gonorrhœa are cultivated on ascites agar and transferred to fresh media every forty eight hours so that after three or four transfers pure cultures are obtained. After ten days of growth the cultures lose their virulence and should not be used. A suspension made by adding 3 c cm of a physiological solution to a forty eight hour culture containing from eight to twelve billion organisms and agitating the tube is drawn up in a sterile syringe. One cubic centimeter is then injected subcutaneously. The injection may be repeated after from ten to fourteen days.

Following the injection the author noted disappearance of the organisms from the infected area within two weeks accompanied by a reduction in the amount of pus in the discharge. In the majority of cases one injection was sufficient to bring about immunity and cure.

HAROLD C BLACK M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Alvarez W C and Hosoi K Reversed Gradients in the Bowel of Pregnant Animals 1st J Obst & Gynec 1930 xix 35

Many years ago when Alvarez first conceived the gradient theory of peristalsis it occurred to him that much of the nausea vomiting and heartburn of pregnancy might well be due to a reversal of one or more of the intestinal gradients. Such a reversal might conceivably be brought about by an increase in the metabolic rate and activity of the muscle in the lower part of the bowel an increase related in some way to the increase in the metabolic activity of the pelvic organs.

As Hofbauer has shown the stimulus of pregnancy leads not only to hypertrophy of the uterus but also to hypertrophy of the muscle in the trigone of the bladder the lower end of the ureters and the vagina. It produces marked changes in the blood supply of all of the organs in the pelvis and alters their reactions to drugs and the stimulation of nerves. Such modifications in structure and function are to be expected as Child has shown again and again that changes in the metabolic activity of one part of an organism will profoundly affect the growth and activity of adjacent parts.

In attempting to put these theories to a test Alvarez years ago studied the gradients in the rate of rhythmic contraction and in the catalase content in a number of pregnant rabbits. So little difference from the normal was found that the problem was put aside until more could be learned about some of the other gradients that were then being discovered in normal animals. Recently when the authors succeeded in reversing the gradients of the latent period and irritability by artificial stimulation of the muscle at the lower end of the ileum (by the injection of a few drops of turpentine) it occurred to them that these gradients might be reversed also by pregnancy.

Studies made on pregnant rabbits showed that the rate of rhythmic contraction in the small bowel was slightly slowed but there was no change in the gradient from the duodenum to the ileum. The gradient in irritability was flattened in some of the animals and reversed in others. The gradient of latent period was always reversed. Conduction was somewhat changed in that waves moving orally traveled a little faster than those moving caudad.

Peristaltic rushes were inhibited. They were hard to start and they became slower instead of faster as they should normally.

In puerperal animals the bowel was unusually irritable but the gradient of irritability was normal. The gradient in the latent period was reversed.

In sickly animals some of the gradients were reversed or flattened while others remained normal. This may be a factor of safety enabling the organism to continue with digestion at times when there is a marked tendency toward reverse peristalsis in the bowel.

The authors express the hope that a drug will be found which will restore gradients to normal. The difficulties in the way of finding such a drug are discussed.

It is suggested that reversal of gradients may occur in pregnant women and may account for some of the nausea and vomiting of pregnancy.

It is suggested also that the dilatation of the ureters so commonly seen in pregnant women may be due to a reversal in the ureteral gradient from kidney pelvis to bladder.

Jerlov E. The Hemoglobin Deficiency During Pregnancy and a Suggestion for the Prevention of Anæmia (Ueber den Hämoglobinmangel während der Gravidität und ein Vorschlag zu Anæmie prophylaxe) Acta obst et gynec Scand 1929 viii 356

The author reports determinations of the hemoglobin percentage in the blood of 143 pregnant women. The cases are grouped as follows:

Group 1 (not treated with iron hemoglobin above 70 per cent)

(a) 707 cases examined once (b) 141 cases examined twice or more frequently

Group 2 (treated with iron hemoglobin less than 70 per cent)

(a) 175 cases examined once (b) 120 cases examined twice or more frequently

This grouping shows that in 295 cases 25.9 per cent of the total number the hemoglobin was below 70 per cent. When the average value for each month of pregnancy was calculated it was found to fall progressively as is shown in the following table:

Month of pregnancy	Number of determinations	Average value
3	42	83.0
4	47	78.4
5	44	78.0
6	45	75.3
7	105	75.0
8	225	73.9
9	417	73.2
10	392	71.1

Of the 141 cases in Group 1 in which 2 or more determinations were made 64 per cent showed a moderate decrease as the pregnancy progressed. In 19 per cent the value remained constant, and in 17 per cent it was somewhat decreased. In 2.7 per cent of the cases the percentage was between 40

and 50 in 13.9 per cent between 50 and 60 and in 83.4 per cent, between 60 and 70.

The effect of treatment with iron, iron and arsenic or fresh vegetables was evidenced in Group 2 by an increase in the hæmoglobin in 90 per cent of the cases. However, in spite of the treatment the value remained constant in 5 per cent and decreased in 5 per cent.

The author advises treatment of all pregnant women whose hæmoglobin value has fallen below the normal for the month of their pregnancy, because he regards it of great importance to prevent the anaemia which is so common in pregnancy, and always terminates in more or less pronounced bleeding and because an untreated anæmic woman will be handicapped if she is called upon to combat such a condition as infection or thrombosis during the puerperium.

Skajaa K. Variations in the Cell Volume of the Blood in Pregnancy Toxæmia and in Labor. *Acta obst. et gynec. Scand.* 1929, vol. 377.

The author made 800 determinations of the cell volume of the blood at the end of pregnancy and during and after labor. These included repeated determinations in the cases of 118 women and single determinations in the cases of 80 women.

The results showed that during pregnancy the cell volume was decreased. In 120 normal women at the end of pregnancy it varied between 27.5 and 44.5 per cent (average 36.4 per cent) whereas in normal non pregnant women it was about 43 per cent. The decrease was caused by an increase in the amount of plasma in the blood.

When the cases studied were grouped according to the degree of intoxication present a certain regularity in the variations became apparent.

In women without any signs of pregnancy intoxication the cell volume remained unchanged during the last weeks before labor and showed only a slight increase or none at all during labor.

In women with albuminuria during labor the cell volume usually increased during the course of labor. As a rule the increase was moderate.

In women who showed signs of intoxication during pregnancy (without eclampsia) there were marked variations in the cell volume which began with thickening of the blood. The thickening of the blood rarely remained constant for any length of time being soon followed by more or less thinning. It usually appeared before labor and lasted during labor.

In all cases with rather marked thickening of the blood there were increasing symptoms of intoxication and when marked thinning of the blood occurred there was clinically a pronounced regression of the symptoms. Conversely all cases with distinctly increasing or decreasing symptoms of intoxication showed corresponding changes in the concentration of the blood.

The most marked thickening was found in threatened eclampsia. This amounted to 23 per cent before labor and 30 per cent after labor. The greatest

thinning before labor (25 per cent) was observed after intercurrent threatened eclampsia. Judging from the higher cell volumes noted during the attacks and the great thinning after cessation of the attacks the thickening of the blood is much more marked in eclampsia than in threatening eclampsia.

It appeared that in eclampsia the blood underwent very rapid changes in its concentration being thickened before during and just after the attacks but thinned to 25 per cent between the attacks. After cessation of the attacks there was a very rapid thinning.

In 21 cases with more or less marked signs of intoxication a thickening of the blood was found at the beginning of labor but thinning followed in the action of morphine.

In about half of the cases without signs of pregnancy intoxication the cell volume increased uniformly after labor above the values noted during labor so that after from twelve to fourteen days it approached 43 per cent. A loss of about 300 c cm of blood during labor had no noteworthy effect on the cell volume. The behavior of the cell volume in these cases is to be regarded as entirely normal as it restored the physiological relationship between the blood corpuscles and plasma after the termination of the pregnancy. In the group of cases with albuminuria during labor there were only 2 which showed such behavior and in the group with marked pregnancy intoxication there was none.

In all other cases a marked transient thinning of the blood appeared in the first few days after labor even when the loss of blood during labor had been minimal. In almost all of the cases the thinning was much more than was necessary to compensate for the blood loss and is evidently to be regarded as a compensation or possibly a hypercompensation of a previous thickening of the blood.

After the transient thinning the cell volume increased rapidly in the cases without signs of intoxication but in some of those with albuminuria during labor the increase occurred less rapidly and in the cases with marked symptoms of intoxication it was still slower. In the cases with threatened eclampsia the cell volume twelve days after delivery was never higher than 33 per cent and averaged 31 per cent. In the cases of eclampsia the average value was 26.0 per cent. In eclampsia the cell volume usually did not increase after the decrease immediately following labor but showed falling values for from twenty to fifty days.

The shorter or longer persistence of the usual sequelæ of pregnancy intoxication and albuminuria seemed to play no part in the causation of low cell volumes. Apparently the decisive factor was the severity of the intoxication. Even the most severe postpartum hemorrhages did not delay the re-establishment of the physiological cell concentration of the blood nearly so much as a previous severe intoxication of pregnancy.

From these findings it appears that the variations in the concentration of the blood which were found

in so many cases at the end of pregnancy were caused by the intoxication of pregnancy. It may be assumed that the thickening of the blood during labor may be attributed to the well known effect of labor in aggravating an intoxication already present or causing the development of an intoxication. In the same way the thinning of the blood after labor may be related to cessation of the intoxication. Significant of such a relationship is the fact that in post partum eclampsia thinning does not occur until the attacks finally cease.

The observation that, after the administration of morphine thickening of the blood ceases and may be followed by thinning is attributed by the author to relief of the intoxication and is in agreement with the favorable effect exerted by morphine and chloral in the Stroganoff treatment of eclampsia. It seems to indicate that the morphine not only decrease the tendency toward convulsions but has a favorable effect also upon the intoxication itself.

LOUIS NEUWELT M D

Stander H J Eastman N J and Harrison E P Jr The Acid Base Equilibrium of the Blood in the Late Toxæmia of Pregnancy *Am J Obst & Gynec* 1930 xix 26

This article is based upon total blood serum electrolyte studies in which the hydrogen ion concentration and the organic acids were determined electrometrically. The authors draw the following conclusions:

1 Normal gestation is accompanied by a reduction in the total base amounting to about 8 mm.

2 With this reduction in the total base there is a decrease in the anions serum protein and bicarbonate.

3 The acidosis of normal pregnancy denoting an accumulation of abnormal acids is a misnomer. It would be more correct to speak of a compensated alkali deficit of pregnancy.

4 Low reserve kidney and nephritic toxæmia complicating pregnancy show the same changes in acid base balance as normal pregnancy except when the nephritis is severe enough to produce uræmia.

5 Eclampsia at the time of convulsions and coma is associated with a true acidosis due to an uncompensated alkali deficit, as demonstrated by a definite increase in the hydrogen ion concentration.

6 This acidosis should be regarded as a result of the eclamptic convulsion and is sometimes severe enough to cause death by itself.

7 General anesthesia is contra indicated in the treatment of eclampsia as it still further increases the acidosis due to the disease.

8 It is possible that the high fetal mortality in eclampsia may be due in part to the acidosis.

9 Insulin therapy is of definite help in relieving the acidosis of eclampsia but because of the marked uncompensated alkali deficit it may be advisable to attempt to treat the acidosis much more radically as for example by the intravenous administration of sodium bicarbonate.

E L CORNELL M D

LABOR AND ITS COMPLICATIONS

Fruhnholtz, A The Cause of the Onset of Labor (A propos du déterminisme de la parturition) *Presse méd* Par 1929 xxviii 1525

Studies on animals suggest that the onset of labor depends in part on the combined action of the hormones of the posterior lobe of the hypophysis and the ovary. The hypophyseal secretion inhibited in the first part of gestation by the secretion of the corpus luteum tends to re appear toward the end of gestation simultaneously with re establishment of the follicular secretion of the ovary.

Empirical clinical observation indicates persistence of ovarian function during pregnancy. During the first three or four months and toward the end of gestation this function becomes very evident being manifested by painful uterine contractions and dysuria at the dates of the first two or three menstrual periods that would have occurred in the absence of pregnancy a false beginning of labor a month before term rupture of the membranes and increased vaginal discharge. The rhythm of the ovarian function may be a factor establishing the date of parturition. The duration of gestation is equivalent to ten normal menstrual cycles. If the menstrual cycles are normally long the gestation may appear to be prolonged. It seems that a hormone is elaborated in preparation for labor as in preparation for menstruation.

When once initiated labor is maintained by mechanical irritation of the uterine contents exerted especially in the lower segment of the uterus.

ALBERT D DE GROIT M D

Hirst J C An Analysis of Eighty Four Consecutive Cesarean Sections *Am J Obst & Gynec* 1929 xviii 773

The eighty four cesarean sections reviewed by the author were done in 3 979 deliveries. The pre operative preparation did not include the administration of morphine. In most instances anesthesia was induced with nitrous oxide oxygen with a minimal amount of ether. Local anesthesia was employed in only 2 cases. When the operation was elective there was no preliminary cervical dilatation. No intra uterine packing was done in any case. In neglected cases and those in which an examination had been made mercurochrome gauze vaginal packing was introduced while the patient was on the table and removed as soon as the operation was completed. All incisions in the fundus of the uterus were sutured with a Lister (or modified) special subserous water tight gut suture which assures freedom from distention and the formation of adhesions. The abdominal wound suturing was the usual procedure with the use of derma skin and 3 or 4 silk worm gut tension sutures. When the operation was well begun aseptic argot and pituitrin were administered.

The high classical cesarean section was performed 34 times the low classical operation 20 times, the

Kerr cervical operation 14 times the Beck cervical operation 12 times marsupialization twice, and the Porro operation twice

The maternal mortality was 8.33 per cent. One death was caused by abruptio placentæ and one by shock. Three per cent of the deaths were due to peritonitis, and 2 per cent to eclampsia. The fetal mortality was 20 per cent.

The total febrile morbidity was 57 per cent. If causes other than puerperal fever are excluded it was 33 per cent.

The total incidence of wound complications was 10.7 per cent. E. I. CORNELL, M.D.

Grosse A. The Results of the Low Cæsarean Section (Les résultats de la césarienne basse). *Revue française de gynécologie et d'obstétrique*, 1929, xxiv, 725.

The author reports the results of low cæsarean section performed on account of contracted rachitic pelvis in twenty-three cases, low implantation of the placenta in eight cases, toxæmia of pregnancy in one case, and deformity of the pelvis and lower extremity in one case. In two cases hysterectomy was necessary in addition—in one on account of fibrosis

uteri and the other on account of a fibroid which could not be enucleated. In two cases a low cæsarean section and in one case a classical cæsarean section had been done previously. In four cases the cæsarean section was performed from nine to forty hours after rupture of the membranes. Of the two deaths in the series of cases, one was due to aspiration pneumonia and the other to septicæmia of unknown origin occurring twelve days after hysterectomy. In the cases of twenty-eight of the thirty-one patients who recovered the postoperative course was afebrile. In the three others there were elevations of the temperature due to malaria, gonorrhœal salpingitis, and antepartum infection respectively. All of the infants were born alive and all survived except the child of the woman with toxæmia.

The author recommends spinal anesthesia for cæsarean section because in maintaining uterine contractions it has a hæmostatic effect. He considers the low operation no more difficult than the classical operation and definitely safer in potentially infected cases. Because of the absence of adhesions subsequent sections can be performed easily.

HAROLD C. MACK, M.D.

GENITO-URINARY SURGERY

ADRENAL KIDNEY, AND URETER

Porter M F, and Porter M F Jr Report of a Case of Paroxysmal Hypertension Cured by the Removal of an Adrenal Tumor *Surg, Gynec & Obst* 1930 1 160

The patient whose case is reported a man thirty nine years of age had suffered for three months from peculiar attacks associated with a sensation in the epigastrium similar to nausea. The attacks occurred without apparent reason usually while he was in bed and lasted about half a minute during which time his color became a "sickly green." Between the attacks he felt well. He discovered that inclining slightly forward and to the left would precipitate an attack. During an attack his blood pressure increased from 110 to 200 in ninety seconds, his pulse slowed down to 55 and became very forcible his color became ashen and he felt very ill. This condition lasted four minutes and at the end of fifteen minutes he felt as well as ever.

A diagnosis of adrenal tumor was made. At exploration through a vertical midline epigastric incision a slightly movable and slightly retroperitoneal globular tumor was found in the renal region on the right side. A transverse incision was therefore made for better exposure. The tumor was easily removed. It had no pedicle and was completely encapsulated. The operation required two hours. The patient was badly shocked for twenty four hours, but was able to leave the hospital fifteen days later. In the seventy four days which had elapsed since the operation at the time this report was made he had had no further attacks.

The tumor was firm smooth and elastic and felt like a tense cyst. Microscopic examination of sections proved it to be an alveolar adenocarcinoma of the adrenal gland probably cortical. The hospital pathologist reported it as an adrenal hypernephroma.

Eight cases of paroxysmal hypertension have been reported. In six it was due to malignancy. Malignant invasion of glands usually results in hypofunction rather than hyperfunction but in cases of chromaffin celled tumors the reverse is the rule.

BENJAMIN F ROLLER M D

Papin E. A Study of Renal Pain. Pains Provoked by Palpation. Painful Points in Reno Ureteral Affections (Étude sur la douleur rénale. Douleurs provoquées par la palpation. Points douloureux dans les affections réno urétrales). *Arch de mal d reins et d organes genito urinaires* 1929 14 353

When a floating kidney low enough to be grasped in both hands is slipped up like a cherry stone by pressure a peculiar painful sensation comparable to that caused by pressure on the testicle is produced.

This pain is of renal origin, but it is doubtful whether the kidney is the source of any of the other painful sensations attributed to it on palpation. One cannot be sure whether it is the kidney or the lumbar or infracostal region which is sensitive to the pressure although when a large suppurating kidney is held between the hands it would be difficult to contend that what is felt is not true renal pain.

In reno ureteral disturbances the painful points are of two kinds those situated on the course of the dorsolumbar nerves and those on the course of the ureter. The ureteral points are three the superior the median and the inferior. The superior ureteral or para umbilical point is situated on the abdominal wall on a horizontal line passing through the umbilicus toward the external edge of the great rectus muscle but inside it. This point is constant in pyelitis and seems to correspond to the anterior perforating branch of the eleventh intercostal nerve. The median ureteral point seems unquestionably to correspond to the ureter itself as does the lower ureteral point.

The painful points in the course of the intercostal nerves and of the lumbar plexus are the costovertebral the costolumbar the subcostal the supra-intraspinous the inguinal the suprapubic, and the buttock or lateral supra iliac points.

Renal pain which starts in the renal parenchyma or the renal pelvis is transmitted to the nerve centers by way of the renal plexus and thence is reflected to the course of the dorso abdominal nerves. These painful points permit indirect determination of the sensitiveness of an internal organ which in corpulent subjects cannot be explored directly.

The zones of Head are the cutaneous zones which correspond to the visceral zone of the same metamere. The reflected pain occurs in the form of neuralgia of the parietal nerves. It develops spontaneously and is increased by movements effort and pressure. In cases of very severe or prolonged excitation a cutaneous hyperæsthesia may develop. Sometimes the hyperæsthesia is so marked that the patient cannot bear the contact of the bed clothes. Usually it is necessary to search out this hyperæsthesia by slightly rubbing or pinching the skin.

In renal diseases contraction of the parietal muscles and of the cremaster is observed. The beneficial action of dry cupping and scarification of the lumbar region in renal diseases is explained by the reflex vasomotor stimulation of tissues arising from the same metamere. Reflex disturbances of a trophic nature also occur. These always appear in corresponding zones of the wall.

Spontaneous pain in renal disease may be continuous or occur in more or less acute attacks. Acute apyretic attacks include (1) the renal colic in renal

lithiasis, hydronephrosis floating kidney and other conditions such as renal tuberculosis and cancer (2) renal strangulation due to torsion of the pedicle and (3) neuralgia of renal origin. The febrile acute attacks include (1) attacks of retention occurring in such conditions as pyelonephritis with distention of the pelvis and hydronephrosis and (2) infectious perinephritis bordering or not on the formation of a perinephritic abscess. *Papin describes the pain in each of these disturbances* **PACR**

Fisch and Verliac The Elimination of Ingested Colon Bacilli by the Kidney. Experiments on the Rabbit (Elimination par le rein du colibacille ingéré. Expériences sur le lapin) *J d'urrol méd et chir* 1929 xxviii 578

Food contaminated with colon bacillus cultures was fed to a rabbit. Oxamide to the amount of 2 gm was added to the food mixture to favor renal localization. After eight days signs of infection appeared and the animal was killed. Cultures of renal calyces made at this time were positive for the colon bacillus. At necropsy the stomach and a large part of the colon were found distended and filled with fluid food. The rest of the large intestine was collapsed and empty. The walls of the stomach and of the large intestine in both the distended and the collapsed parts were greatly thickened. The small intestine was empty presenting slender and transparent loops. The bladder was distended and its wall was thickened. The urine obtained on puncture of the bladder was turbid because of the presence of salts but microscopic examination showed it to be free from pus and to contain few colon bacilli. Three small stones were found in the kidney. These were attributed to the oxamide.

Microscopic examination of the large intestine showed extreme development of the lymphoid layer in the dilated portion, numerous leucocytes passing through the epithelium at certain points in the glands and inflammatory leucocytic oedematous reactions at the center of the follicles. In the kidney slight perivascular sclerosis and desquamations in certain areas of the pelvis were seen but no inflammatory lesions. In the suprarenals numerous colon bacilli were found in the lacerated zones. Colon bacilli were present over a large part of the surface of the intestinal mucosa. They were found also in the mucous and submucous tissues but not in the muscular tissue. In the cross sections of the kidney the course of the colon bacillus could not be followed as the bacilli were disseminated from the cortical region to the pelvis.

From the anatomicopathological point of view the tissue was most injured where the bacilli were in closest contact with it in the intestine. The kidney presented no pronounced lesions and no loci of suppuration. The course taken by the bacillus could be traced from the intestinal mucosa and submucosa to the blood thence into the canals of the renal parenchyma and thence into the bladder urine. Pyelonephritis was not demonstrated nor pus in the urine.

The colon bacillus in the bladder urine represented only the elimination of the micro organism which had caused a generalized infection with positive blood cultures **FLORENCE A CARPENTER**

Thomas G J Renal Tuberculosis *J Am M* 1930 xcix 219

From the study of a large number of cases the author has come to the conclusion that renal tuberculosis is secondary to generalized tuberculosis. He states that for the study of the early renal lesion of tuberculosis the patient should be under observation in a sanatorium as it is during the active stage of the original pulmonary or other tuberculous lesion that the kidney becomes infected. In the majority of cases renal tuberculosis is bilateral.

To prove the presence of a non destructive tuberculous infection in an apparently sound kidney repeated examinations are necessary. Removal of one infected kidney should never be done until it has been proved conclusively that the other kidney is free from destructive lesions. As non destructive lesions will heal the patient with such lesions should be given the advantage of sanatorium treatment to assist him in building up a resistance against the tuberculosis. Nephrectomy is only the beginning of treatment for renal tuberculosis. After the operation the patient should be kept in a sanatorium until all evidence of active tuberculosis has disappeared **JOHN G CHESTNUT M D**

Salleras J, and Villar C Spontaneous Renocolic Fistula Caused by Renal Tuberculosis. Pyelographic Diagnosis (Fistula renocolica espontánea por tuberculosis renal. diagnóstico pielográfico) *Si mona med* 1929 xxxii 1195

The technique of pyelography has been so perfected that the procedure can be used without danger even in renal tuberculosis. The authors have obtained excellent roentgenograms of secondary malformations of the calyces from ulceration of the papillae or caseation of the pyramids.

The fistula between the right kidney and the colon which is reported in this article was found in a woman twenty years of age. On making the first pyelographic examination the authors were surprised to observe immediate intestinal colic and evacuation. The plate showed that the sodium iodide had poured into the descending colon and rectum. The kidney was greatly deformed and a tract passed from its lower pole to the first part of the ascending colon. In another pyelographic examination made a week later after evacuation of the intestine 180 ccm of the contrast fluid were injected. The plate again clearly showed the fistula from the lower pole of the kidney to the colon. A reflux of the contrast medium occurred through the caecum into the small intestine.

The patient gave a history of acute inflammation in the right iliac fossa which was thought to be acute appendicitis. The authors believe that this was due to perforation of the renal capsule. The rupture into

the intestine was not noticed. The authors assume that a plaque formed over the opening and later became absorbed, intestinal disturbance being thereby prevented.

Subcapsular nephrectomy was done and was not followed by a lumbar fistula.

AUDREY G. MORGAN M.D.

Keyes E. L. Operation on the Single Kidney Especially for Stone. *J. Am. Med. Ass.* 1930 XLIV 152

The author reports in detail six cases of single kidney in which he performed a successful operation on the remaining kidney. The purpose of his article is to show that the surgeon need not hesitate to perform any necessary renal surgery in cases of single kidney as the immediate reaction and end results usually differ very little from those in cases in which both kidneys are present.

JOHN G. CHEETHAM M.D.

O'Connor J. and Johnson R. H. Ureterocele. *J. Urol.* 1930 XLIII 33

This report is based on a series of nineteen cases of ureterocele occurring between the ages of nineteen and sixty years. Twelve of the subjects were women.

The authors make a definite distinction between ureterocele and prolapse of the ureteral mucosa. They summarize the various theories as to the cause of ureterocele. From the findings in their own cases they conclude that the condition is due to a combination of stenosis of the ureteral orifice and congenital weakness of the surrounding muscular and connective tissue elements.

The symptoms in the cases reviewed were usually those of ureteral obstruction plus infection. The treatment consisted in widening of the ureteral osium by slitting or electrocoagulation followed by systematic dilatation.

In two of the cases there was such advanced renal destruction that nephrectomy was necessary.

IRVING J. SHAPIRO M.D.

Hunt J. C. The Necessity for Operations on the Ureter Including Ureterectomy Subsequent to Nephrectomy. *J. Urol.* 1930 XLIII 43

Clinical experience substantiates Latchem's observations for rarely are operations on the ureter required subsequent to nephrectomy for extensive infections of the kidney.

It would seem that the extensive involvement of the ureter in renal tuberculosis should occasionally provide indications for subsequent ureterectomy, but experience has shown that the ureter like the bladder rarely remains infected after the removal of a tuberculous kidney.

In cases of ureteral lithiasis there is sometimes an associated renal lithiasis by which the kidney is so severely injured as to necessitate nephrectomy or, in the absence of renal lithiasis the kidney is so injured by complete ureteral obstruction as to require the radical operation. Under such circumstances it has been the author's practice to perform a partial

or total ureterectomy simultaneously with nephrectomy removing with the kidney, enough of the ureter to include the ureteral stone. This has always given good results. Experience has shown that a ureteral stone persisting after nephrectomy is often the source of pyuria and is one of the most frequent indications for surgical intervention for pyuria after nephrectomy.

Hypernephroma so called usually progresses by direct invasion of the kidney, perirenal tissues, and renal vein and rarely involves the ureter. The author cites two cases in which extension occurred to the ureter and ureterectomy was done subsequent to nephrectomy because of hematuria from the ureter. Involvement of the ureter secondary to the primary renal lesion was found.

In cases of papillary epithelioma of the renal pelvis complete ureterectomy including the intramural portion of the ureter and performed simultaneously with nephrectomy gives a better prognosis than nephrectomy with subsequent ureterectomy.

GENITAL ORGANS

Lowsley O. S. and Duff J. Tuberculosis of the Prostate Gland. *Ann. Surg.* 1930 XCI 106

Tuberculosis of the prostate is usually secondary. Ordinarily surgery is not indicated. The evacuation of a tuberculous abscess of the prostate is to be avoided when possible as it is apt to be followed by sinuses which heal slowly or not at all.

In the non-operative treatment, the authors use tuberculin unless the patient is suffering also from active pulmonary tuberculosis. This is employed as an adjunct to hygienic dietetic and rest treatment, mercury vapor quartz light therapy, heliotherapy, and the indicated urological treatment. Koch's old tuberculin is used. It is supposed to cause an inflammatory reaction at the site of the disease and thereby promote fibrosis. Serial doses begun in small amounts are slowly increased until evidence of a local focal or constitutional reaction occurs. The dose is then reduced and continued with a cautious increase until another reaction occurs when it is again reduced and continued as before. The usual beginning dose is 0.1 c.c. of a 1:10,000,000 dilution of the tuberculin. The injections are given subcutaneously.

In the preparation of the serial dilutions seven wide mouthed glass stoppered bottles are used. Into one of the bottles 1 c.c. of Koch's old tuberculin is placed and to this is added 9 c.c. of the diluent consisting of distilled water to which 0.8 per cent of sodium chloride and 0.25 per cent of phenol have been added. The bottle is then shaken well, 1 c.c. of its contents is withdrawn and placed in one of the remaining bottles and the dilution is carried out as before. The same procedure is repeated for the rest of the bottles. The bottles are kept in a refrigerator. Fresh dilutions are made about every two weeks during the summer and monthly during the winter.

The authors have found the injections of tuberculin very beneficial and never harmful

BENJAMIN F. ROLLER, M.D.

Minet H. Non Tuberculous Vesiculitis (Les vésiculites non tuberculeuses). *Presse méd. Par.* 1920 xxvii 1407, *J. d'uról méd. et chir.* 1929 xxviii 478

Since the appearance of the classical thesis of Guelliot in 1883 little has been added to the pathology of the seminal vesicles but in America some new theories have been suggested regarding the relation of the seminal vesicles to systemic infections particularly infectious arthritis. Certain surgeons following the lead of Fuller have attacked the vesicles surgically, draining or extirpating them. More recently antiseptic injections have been made with results reported as excellent.

The cause of seminal vesiculitis is always bacterial. The non infectious forms described in the past do not occur. Guelliot believed that nearly all cases were caused by the gonococcus. This theory has been confirmed by cultured methods but it is known that after from two to three years the gonococcus gives place to secondary invaders. Smith and Morrissey were unable to cultivate organisms from vesicles that had been diseased for a long period. Next to the gonococcus the most common agents of infection are the staphylococcus streptococcus colon bacillus enterococcus pyocyanus diphtheroids pneumococcus bacillus typhosus and meningococcus.

Acute inflammations of the seminal vesicles may be catarrhal interstitial or suppurative with extension to the surrounding cellular tissue. The acute inflammation may become chronic resulting in chronic catarrhal chronic suppurative or fibrous seminal vesiculitis. The fibrous type succeeds the suppurative type. When the surrounding cellular tissue is involved adhesions are formed to the neighboring pelvic organs.

The symptoms of acute seminal vesiculitis are usually those of a urethrocystitis frequent painful micturition terminal hæmaturia and pyuria and perineal pain. When suppuration is present there is fever. In some cases however these symptoms may be very slight or entirely absent. On rectal palpation the vesicles may be merely sensitive to pressure without being perceptibly altered or they may be found enlarged and soft or definitely distended. It may or may not be possible to evacuate them under pressure. When a perivesicular phlegmon has formed the prostate and vesicles are masked by a boggy area or by fluctuation.

The symptoms of chronic vesiculitis are extremely variable. The most characteristic are hæmospermia and recurring epididymitis. The positive signs depend on palpation microscopic examination of the secretions, and endoscopic examination of the posterior urethra.

Most important is the prevention of seminal vesiculitis by proper treatment of the original ure-

thritis. When the condition is once established the classical methods of treatment should be employed and supplemented by protein therapy and chemo-therapy. The use of vaccines is usually disappointing and may even be dangerous. When suppuration occurs incision of the vesicle is justified. Especially the hæmatogenous form demands early evacuation. There is usually also an abscess to be opened.

The treatment of chronic vesiculitis should be directed to the foci that maintain the condition which is usually to be found in the posterior urethra. There may be a stricture or a bladder or kidney affection. Conservative local treatment consists essentially of massage and diathermy and is sufficient in the majority of cases.

The operative treatment includes injection of the vesicles by the vas (Belfield) or the ejaculatory duct (Marck Lutz Young) puncture vesiculotomy and vesiculectomy. In cases with retention and fever cystostomy is sometimes indicated. Injection of the vesicles widely employed in America has met with opposition in Europe. Opinions as to its results differ widely but because of the cures of rebellious urethritis recurring epididymitis and rheumatism that have unquestionably been obtained by it it deserves consideration.

Palhavi's operative treatment includes vasectomy, epididymotomy, epididymectomy and cystostomy.

ALBERT F. DE GROOT, M.D.

Gibson T. E. Idiopathic Gangrene of the Scrotum. *J. Urol.* 1930 xxii 125

Gibson reports in detail a case of so-called idiopathic gangrene of the scrotum characterized by a sudden onset and extreme prostration. The gangrene spread rapidly through the superficial tissues. Extensive incisions were made in the involved tissues and large quantities of pus and gas were evacuated. The patient died four days after the onset of the condition. Autopsy failed to reveal a cause for the disease.

The author reviews 206 cases collected from the literature. He believes that there is a close relationship between this condition and urinary extravasation. Although in his own case cultures failed to reveal the presence of anaerobic organisms he believes that such organisms are the primary invaders. The mortality in the cases collected from the literature was 26.7 per cent.

As treatment Gibson advocates multiple and extensive incisions irrigation with Dakin's solution and the use of anaerobic sera and antitoxin.

The article is supplemented by an extensive bibliography.

IRVING J. SHAPIRO, M.D.

MISCELLANEOUS

Vintici V. and Constantinescu N. N. Aseptic Pyurias (Les pyuries aseptiques). *J. d'uról méd. et chir.* 1929 xxviii 517

The authors review ninety three cases of pyuria. They call attention to the fact that a leucocyturia

may easily be mistaken for aseptic pyuria. The differentiation must be based on the character of the leucocytes and their grouping rather than on their number. In leucocyturia the leucocytes are not destroyed or deformed and agglutination is limited to two or three cells. The condition indicates that the urinary tract is the site of irritation which is not strong enough to destroy the leucocytes. It may be determined by bacteria chemical or mechanical agents, and an abnormal salt content of the urine. The laboratory worker should not be hasty in affirming the presence of pus.

Pyuria is the result of inflammation of the urinary tract produced by destruction of the white blood cells in the phagocytic struggle and in the urine itself. Other substances besides bacterial toxins that favor the formation of pus are the salts of mercury croton oil ammonia antipyrine silver nitrate the salts of iodine sodium chloride and thimerosal.

Aseptic pyurias of bacterial origin may be explained only by (1) the rupture into the urinary passages of a closed renal or pararenal pocket containing cold pus in which the bacteria have been destroyed or (2) a filtrable virus. The first possibility is difficult to admit for the reason that living bacteria are practically always found if repeated cultures are made. Against the second hypothesis is the fact that pyuria has not been mentioned in the description of diseases which are now considered as due to a filtrable virus. In the authors opinion so called aseptic pyurias of bacterial origin are false aseptic pyurias.

Toxins are next considered. Endogenous toxins of cellular or gastro intestinal origin may be eliminated in large quantities in the urine. When this occurs the urine appears fermented and has a foetid odor but there is no trace of leucocyturia. The renal cells may undergo anatomicopathological changes but there is no pyuria. As soon as the bacteria that have provoked the intestinal fermentation appear in the urine or become localized in the urinary tract pyuria occurs but it is not aseptic pyuria. Exogenous toxins of bacterial origin (in diphtheria for instance) act on the kidney provoking congestive lesions and lesions of the glomerulotubular apparatus. The action of the endotoxin differs *in vitro* and *in vivo*. *In vitro* it cannot be separated from the action of the bacterium. Chemical poisons may determine either necrotic lesions with efflux of leucocytes or atrophic or sclerotic lesions. In neither case can one speak of pyuria. Mechanical irritation can produce if not manifest pyuria at least an abundant leucocyturia. The mechanism must be sought in prolonged irritation such as occurs in the course of nephritic colic or during the continual discharge of gravel. This mechanism was not demonstrated in the authors cases. As a rule pyuria is a manifestation of infection. False aseptic pyuria occurs in tuberculosis of the kidneys pyelonephritis and renal lithiasis. In the two latter conditions it may be intermittent. The authors found it in a case of polycystic kidney.

FLORENCE A. CARPENTER

Fisch J. The Intestinal Phase of the Colon Bacillus (*Stade intestinal du colibacille*). *Arch urol de la clin de Necker* 1929 vi 445

Beginning with the studies of Pasteur Fisch first reviews the investigations which have been made to date on the action of the colon bacillus on the body particularly the effects of its toxins. He then describes the experimental work on rabbits done by himself and Verhac with regard to the effects produced at a distance by soluble substances elaborated by the colon bacillus in the intestine.

Acting on the nervous centers some of these substances provoke vasodilatation or vasoconstriction whereas others favor negative or positive chemotaxis aiding or opposing diaporesis. They first affect the intestine itself and after passing into the circulation exert an influence on the general condition through the nervous system. On the excretory apparatus they have a direct action which favors the localization of infection.

In the intestine the soluble substances elaborated by the colon bacillus cause paresis or paralysis through irritation of the splanchnic. By their influence on the vasomotor nerves of the intestinal vessels they facilitate their own passage into the circulation and also the passage of the bacilli.

Their effects on the nervous system are complex. In the experiments reported they varied widely with small differences in the quantity of culture injected. The injection of 0.5 c.c. into the marginal vein of the ear of a rabbit of medium weight resulted in an immediate strong reaction lasting two hours. A rabbit which received 0.75 c.c. presented a still more pronounced hyperexcitability at first but later developed asthenia followed by paralysis of the posterior extremities lasting three days. Blood withdrawn two hours after the injection from each of these animals proved negative on culture. In a rabbit which received 1 c.c. the reaction was much more accentuated than in the others. Spasmodic cough developed accompanied by plaintive cries. The animal was killed without waiting for terminal manifestations.

The action on the kidney of the soluble substances elaborated by the colon bacillus may produce variations in secretion. In one of the experiments reported arrest of the secretion of the kidney was observed. In general however the bladders of rabbits which were fed colon bacilli were filled. The toxin was found in the urine with its power undiminished.

In clinical cases without generalized infection shown by positive blood cultures the manifestations of a similar activity on the part of the colon bacillus in the intestine are insidious. The intestinal evacuations are usually fairly regular but are incomplete. The patient complains of somnolence and of a metallic taste. The paresis and lack of tonicity of the intestinal wall will be revealed by roentgen examination. Other manifestations of the action of the toxins are slight nervous and circulatory disturbances weakness of the legs anesthesia or

analgesia of the extremities hyperexcitability of the reflexes, dorsolumbar pain headache weak memory and emotional disturbances Spasms of the renal pelvis are manifested by turbidity of the urine after fatigue exposure to cold or a change in the diet The urine is irritating and may produce erosions resulting in cystalgia The spasms may be so violent as to cause a true retention with the symptoms of pyelonephritis accompanied by a rise in the temperature

In the bladder the irritation occurs in the region of the neck Hæmaturia may result The urine shows evidence of the passage of irritating substances It may not be actually turbid but it contains small corpuscles in suspension The irritation is due to the large proportion of substances in solution or the presence of substances that do not cause turbidity such as uric acid and oxalates These substances in contact with the mucous membrane of the urinary tract cause congestion or inflammation and their repeated elimination may provoke suppuration It is thus that the products of the colon bacillus in solution or crystallized prepare the tissues for the lodgment of the bacilli and the development of infection

The article is supplemented by an extensive bibliography
FLORENCE A. CARPENTER

Fisch J. The Circulatory Phase of the Colon Bacillus (*L'étape sanguine du colibacille*) *Arch urol de la clin de Necker* 1929 vi 457

The colon bacillus is recognized as the most frequent cause of urinary affections At the present

time it is most generally believed that the organism reaches the kidney by way of the blood stream Nevertheless blood cultures are negative To explain this fact the author goes back to observations and experiments he made in 1912 In cases of elevation of the temperature in the puerperium in which the blood cultures were negative he discovered in the blood motile bodies of a shape which suggested that they might be bacilli diminished in size deformed or fragmented In experiments in which he placed colon bacilli in a phenol solution he found that the bacilli became transformed into bodies with a shape similar to that of the bodies discovered in the blood in the cases of puerperal infection In some of the tubes these bodies proved capable of regeneration and subsequent cultivation The circulating blood differs from blood *in vitro* in that it possesses an antiseptic property which appears to be particularly effective against the colon bacillus

Fisch assumes that the colon bacillus entering the circulation from the intestine undergoes a transformation which renders it incapable of growth hence the negative blood cultures in the usual case of urinary disease due to that micro-organism He believes also that the bacilli are eliminated in the urine in this attenuated condition or under certain circumstances regenerate in the urine These theories have been confirmed by animal experiments

The article is concluded with a review of the literature on the pathogenicity of the colon bacillus the attenuation of pathological micro-organisms and the defensive power of the blood against pathological micro-organisms
FLORENCE A. CARPENTER

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES JOINTS, MUSCLES TENDONS, ETC

Andrieu *Juxta Articular Osteitis* (Les ostéites juxta articulaires) *Presse méd. Par.*, 1929 xxxvii 1391

Juxta articular osteitis occurs most frequently in young infants and adolescent males. In one fourth of the cases there are evidences of tuberculosis elsewhere in the body. The joints most frequently involved are the hip, knee, elbow, and shoulder. The lesion may extend to the joint by perforating through the epiphyseal and articular cartilages. In some cases the joint is involved directly because of the normal anatomical proximity of the synovial membrane to the osseous lesion. In any case a hyarthrosis with thickening of the synovial membrane occurs early. At first this is due simply to irritation from the neighboring inflammatory process. No bacilli can be demonstrated in the joint at this stage.

Disturbances of growth are frequent and may be the only evidence of a lesion that has healed. The bone may be abnormally long because of irritation of the epiphyseal cartilage or abnormally short because of destruction.

Involvement of the shoulder is usually secondary to a lesion in the humerus; involvement of the elbow, to a lesion in the ulna; and involvement of the wrist to a lesion in the radius. Lesions of the hip usually begin in the upper border of the acetabulum. When the neck of the femur is involved, infection of the hip joint is inevitable. In involvement of the knee the primary lesion is usually in the upper end of the tibia and in the patella. Involvement of the ankle is usually secondary to involvement of the astragalus.

The early symptoms of osteitis are variable and often extremely slight. As a rule the patient has vague pains about the joint which are relieved by rest and aggravated by exercise. Disease of the hip is often manifested by pain in the knee. In the upper extremity pain is less frequent and the first sign of the condition is often a cold abscess. In the knee hyarthrosis is not uncommonly the first sign of involvement. Even in the presence of a fistula these early signs are not sufficient for an exact diagnosis. The nature of the condition can be determined definitely only by aspiration of the joint fluid and roentgenography. In the roentgenographic examination bilateral views should be taken for comparison. When there is a fistula the exact site of the lesion can be determined by the injection of lipiodol.

The length of time elapsing between the first appearance of the symptoms and the institution of treatment averages ten months in the case of the shoulder, from three to four months in the case of the elbow, from twelve to sixteen months in the case of the hip, from eight to nine months in the case of

the knee, and from four to five months in the case of the ankle. In 84 per cent of the cases recovery results without operation. The period required for recovery is two years in the case of the shoulder, eight months in the case of the elbow, eight months in the case of the wrist, from two and a half to three years in the case of the hip, and two years in the cases of the knee and ankle. Operative treatment reduces the time of recovery by one fourth. The articular involvement is not regarded as particularly grave.

To avoid gross errors in the treatment, syphilis must always be excluded. Orthopedic treatment should be carried out as though joint infection already existed. It should include immobilization, heliotherapy, and the aspiration of pus. The operative treatment consists in evacuation and curettage of the focus in the bone. When the patient is first seen late in the course of the disease, this should be done immediately to prevent invasion of the joint. Early cases are best treated conservatively for a time at least in order that the evolution of the lesion may be observed. Operation should always be supplemented by all of the measures employed in conservative treatment.

In the discussion of this report FROELICH declared himself in favor of conservative treatment.

POUZET stated that the indications for operation vary with the joint involved. The hip should always be treated conservatively and the elbow surgically.

SORREY stated that he is in favor of operation in all cases to protect the joint.

ROEDERER pointed out that in the adult, the lesions may evolve very slowly and present the appearance of a bone cyst in the roentgenogram.

NOË JOSSERAND stated that in his opinion the hyarthrosis is usually due to invasion by the tubercle bacillus. He called attention to the fact that the articular lesions are usually quite benign and are not incompatible with a mobility of the joint even in advanced cases. ALBERT F. DE GROOT, M.D.

Pthemister D B Chondrosarcoma of Bone *Surg. Gynec. & Obst.* 1930 1 216

Pthemister reports ten chondrosarcomata which were found among sixty one bone tumors and suggests that there should be a separate group for them in the Registry. Chondrosarcomata consist of hyaline cartilage islands which in the growing parts may show karyokinetic figures and other evidences of malignancy and in the older parts show ossification which casts irregular blotchy shadows in the roentgenogram. They grow more rapidly than osteogenic sarcomata and metastasize later. Their prognosis is somewhat better than that of osteogenic sarcomata.

Three of the tumors reported by Phemister occurred in the femur two in the humerus two in the tibia one in the maxilla one in the spine and one in a rib Chondrosarcoma usually develop at the ends of bone shafts some distance from the epiphyseal line and may arise centrally or peripherally.

One of the cases reported was that of a negro of twenty nine years who developed a painful swelling on the upper part of the arm following an injury. The diagnosis of chondrosarcoma was made from the irregular areas of calcification seen in the roentgenogram. The tumor involved the upper half of the humerus. Amputation was done after roentgenograms of the chest were found negative. The patient was alive and well three and a half years later.

One of the three patients with a chondrosarcoma of the femur is still living nine years after disarticulation of the hip. Microscopic examination showed the tumor to be a rapidly growing neoplasm consisting mostly of cartilage.

Disarticulation of the hip was done also in one of the other cases of chondrosarcoma of the femur but the patient died with symptoms of cerebral metastases. In this instance the tumor involved the upper third of the shaft and consisted of immature hyaline cartilage with irregular areas of calcification and immature bone cells.

In the third case of chondrosarcoma of the femur the involved area was thoroughly curetted treated with phenol and closed. There were no metastases. Sections showed that the greater mass of the central tumor to be composed of hyaline cartilage.

In one of the cases of chondrosarcoma of the humerus the upper portion of the humerus was removed after several unsuccessful attempts had been made to remove the tumor mass around the head of the bone by curettage. A bone graft was inserted to bridge the gap. The tumor was made up mostly of cellular hyaline cartilage. The patient was still free from recurrence after eight years.

The patient with chondrosarcoma of the maxilla died after a year and a half in spite of two attempts to remove the neoplasm.

In the case of chondrosarcoma of a rib death resulted from metastases in the lungs following removal of the neoplasm.

In the case of chondrosarcoma of the spine that of a man forty six years of age the tumor developed on one side of the sixth cervical vertebra and caused complete paralysis by exerting pressure on the cord. An attempt was made to excise it but a part of it could not be reached. Death resulted after five months.

Some chondrosarcomata are peripheral. One of the tibial tumors reported by Phemister occurred on the upper end of the bone in a boy of fourteen years. The great mass of it was cartilage with islands of ossification. On amputation in the mid thigh region a thrombus of cartilage was found in the femoral vein. Nine months later a suspicious shadow was found in the roentgenogram of the lungs although the boy seemed to be in excellent health.

The other chondrosarcoma of the tibia reported occurred in a man of forty years who had had multiple bony protuberances on his pelvis scapula and several long bones since his twelfth year of age. Removal of the tumor from the tibia resulted in infection. Amputation was followed by recurrence at the bone of the stump which necessitated reamputation. A month after the reamputation the patient was still free from recurrence and metastasis. The author cites also two other cases of this type in one of which amputation at the femur and in the other of which complete wide resection of the tumor was done. The patients recovered and were well three and five years respectively after the operation.

In conclusion Phemister states that the metastatic tumors from chondrosarcomata are cartilaginous and may calcify. WILLIAM A. CLARK, M.D.

Liebig F. Circumscribed Myositis Ossificans (*Die Myositis ossificans circumscripta*) *Ergebn d Chir* 1920 xxi 507

Three forms of circumscribed myositis ossificans are to be distinguished—the traumatic the non-traumatic and the neurotic. The traumatic form which formerly was seen in the form of rider's bone or exercise bone or as the result of bayonet wounds occurs today as the result of sport accidents. Posterior luxations of the elbow are responsible for a large percentage of ossifications of muscle. A considerably less frequent cause is luxation of the hip. Osseous changes in the scars of operative wounds belong in a special group. The author cites two cases in which ossification followed injections into the gluteal muscles.

In discussing circumscribed myositis ossificans of non-traumatic origin Liebig calls attention to the uncertainty of the history and reports several cases in which the condition followed an infectious disease and was definitely not of traumatic origin.

With regard to the pathogenesis of the neurotic form Liebig discusses dementia paralytica (Goldberg) hemiplegia arteriosclerotica (Steiner) hemiplegia traumatica (Israel) spina bifida (Eckhorst) tabes dorsalis (Steinert Klemm) syringomyelia (Borchardt Schlesinger and others) transverse myelitis (Kuettners Laue) paraplegia after cord injuries (Israel Ceillier and others) acute anterior poliomyelitis (Drehmann) poliomyelitis (Oppenheim) and polyneuritis with Korsakoff's psychosis (Lasker). Circumscribed neurotic myositis ossificans may develop in the course of any of these conditions.

The traumatic form of circumscribed myositis ossificans occurs most frequently in the quadriceps femoris and brachialis muscles. The muscles of the hip joint and the anterior shoulder region are less frequently affected. Ossification of scars is found practically only in the abdominal muscles. Circumscribed myositis ossificans is most common in the third and fourth decades of life.

The condition is often associated with only very slight pain. Sometimes there is tenderness on pressure which decreases in spite of extension of the

process. Interference with function is dependent upon the site of the ossification. The diagnosis is difficult when the myositis is associated with a fracture and callus formation and myositis are intermingled. Ossification in the scars of wounds is found most often in the midline above the umbilicus after some condition such as stitch infection. In cases of functional disturbance after luxation, particularly after posterior luxation of the elbow, a roentgen examination should be made. Even in such cases the pain is slight as the large vessels and nerve trunks evade the scar.

The non-traumatic and neurotic forms of myositis ossificans are often discovered accidentally at autopsy. The duration of their development varies between weeks and years and the size of the area involved varies from that of a pigeon's egg to that of a plaque 25 cm. long.

In the differential diagnosis it is to be borne in mind that progressive myositis ossificans begins most often in the muscles of the neck and back whereas general interstitial calcinosis occurs not only in the muscles but also subcutaneously in the tendons and fascia and around the joints. Calcium deposits in the tissues and subperiosteal sarcoma may simulate myositis ossificans. Heterotrophic bone formation in striated muscles, ossification of ligaments and new bone formation in the sheaths of nerves must be differentiated.

The course shows that there is a stationary type and a type that heals spontaneously. The neurotic form hardly ever heals spontaneously. Recently diathermy and roentgen irradiation have been recommended as treatment. Operation should not be performed until the process has ceased to develop. Liebig uses the following microscopic classification: 1. Direct bone formation (a) direct transformation of the bone substance, (b) indirect transition of the muscular connective tissue into bone substance (c) transition through osteoid tissue. 2. Indirect bone formation (a) from hyaline cartilage or (b) from fibrocartilage.

The metabolism and internal structure of the animal has an influence on the occurrence of heterotrophic formation of bone. Rona's investigations showed that about two thirds of the blood calcium is dissolved in the blood serum and one third is combined with the serum albumin. Eden found that traumatized muscle tissue is much richer in calcium than normal muscle. Rahl was able to demonstrate calcium excess in the tissues histologically by using ammonium oxalate which transforms the dissolved calcium into the readily recognized crystalline calcium oxalate and does not affect the already deposited calcium phosphate and carbonate. Robinson discovered a ferment that splits off inorganic phosphoric acid from the organic phosphoric acid esters at body temperature and at the reaction of the blood. Seeliger called attention to methods by which circumscribed myositis ossificans can be induced experimentally. With regard to the question as to which tissue has the ability to bring about hetero-

trophic bone formation there is considerable difference of opinion. A few investigators believe it is embryonal tissue. A larger number of investigators ascribe the bone formation to a disturbance of the periosteum, but the majority believe it is the result of metaplasia of connective tissue. PLENN (2)

Ogilvie W H, Verrall J, Jones W, Howell B W and Others. Discussion on Minor Injuries of the Elbow Joint. *Proc. Roy. Soc. Med. Lond.* 1930. XXXI. 306.

OGILVIE gives a most detailed description of the anatomy of the elbow joint. He states that the joint is especially adapted to use between the angles of 110 and 170 degrees. It is only within this range that the greater sigmoid cavity of the ulna is completely engaged with the trochlea of the humerus. The articulation between the humerus and ulna is the real joint between the arm and the forearm. The radial head is of minor importance. From a study of the radial ulnar articulation it is evident that the normal relation between these bones is pronation of from one half to three quarters.

The carrying angle of from 15 to 25 degrees of abduction is present only on forced extension and supination. In complete flexion the ulna and humerus are in the same line. The theory that this angle was developed from the carrying of pails is probably erroneous because supination is not the natural position assumed in the holding of heavy weights and because in the process of evolution (the carrying angle is present in the fetus) elbows were developed millions of years before pails.

Full extension does not occur in natural use. Extension beyond 170 degrees is difficult to maintain. In extension of 180 degrees the articular surface of the radius is half its diameter behind the capitulum, evidently a position for which the capitulum was not designed. Up and down motion can be demonstrated between the ulna and radius.

Supracondylar fractures without displacement are common in childhood and may be easily overlooked. Early motion is indicated after a few days of immobilization. Fracture of the internal epicondyle is usually due to muscular violence. The fragment is pulled downward. The resulting disability is slight although bony union seldom occurs. Oblique fractures of the internal condyle usually occur in children as the result of a fall on the extended hand. The fragment tends to ride upward and should be reduced by traction. Fracture of the external condyle may result in cubitus valgus and late ulnar palsy. Isolated fractures of the capitulum are rare. When the capitulum is detached its removal may be necessary. Fracture of the radial head with loose fragments in the joint demands arthrotomy with removal of all fragments. Fracture through the neck of the radius requires immobilization for ten days followed by motion. If the head is out of alignment, it should be excised.

Tennis elbow, in which there is pain over the external epicondyle, is probably due to the tearing of

muscle fibers at their origin on the bone. It disappears with rest but recurs if the same sort of work or sport is again taken up. The more acute cases with pain and soreness apart from movement are best treated by applying over the tender spot a small pad wet with a counter irritant and strapping the elbow in supination of about 135 degrees. Subacute cases with the formation of fibrous repair tissue require manipulation which stretches the extensors of the wrist to their full extent.

VERRALL ascribes tennis elbow to a combination of toxins and trauma. He regards anterior dislocation of the head of the radius as a serious condition requiring an immediate attempt at reduction. In late cases reduction is sometimes impossible. Verrall believes that fracture of the internal epicondyle should be operated on more frequently.

JONES statistics show that except for fracture of the head of the radius from 45 to 78 per cent of elbow injuries occur in the second decade of life and 91 per cent of supracondylar fractures alone occur before the twentieth year. Jones is skeptical regarding the value of massage for stiffness of the elbow after minor injuries. He believes that the quickest way to restore motion in such cases is to do nothing. He states that in myositis ossificans active motion is better than passive motion. Fracture of the head of the radius usually results in greater limitation of motion than supracondylar fractures. Probably more fragments should be removed. Fractures of the internal epicondyle are usually due to a sudden pull of the muscles attached to the epicondyle. Ulnar palsy is frequently associated with this injury. If the fragment is displaced into the joint it should be removed.

ELUSIE emphasizes the importance of toxemia in cases of tennis elbow. He has found this condition to be most common after the thirty-fifth year of age. He states that when he himself was suffering from it his symptoms subsided after the removal of an abscessed tooth. In a case in which he explored the joint he found arthritic fringes on the posterior aspect. With regard to the after treatment of minor injuries he states that especially in children the best and quickest results follow normal movements without assistance.

TREHOWN reports that he has operated on eight cases of tennis elbow. As synovial pouches and fringes have been found frequently he concludes that the condition is one of traumatic synovitis of the radiohumeral joint. WILLIAM A. CLARK, M.D.

Ghormley R. K. The Abscess of Pott's Disease. *Am. J. Roentgenol.* 1929 xxi: 509.

In general there are two types of abscess in Pott's disease, the thoracic and the lumbar. Because of the differences in the anatomical structures surrounding them these two types of abscesses vary widely in their behavior. The thoracic abscess being held within the confines of the thorax by its peculiar structure produces a widespread dissection of the spinal column surrounding the vertebrae with a large sac of purulent material. The disease process may

be spread over many vertebrae and the result is extensive involvement with serious deformity. The abscesses themselves rarely rupture externally.

The lumbar abscess early leaves the spine and travels along the psoas muscle. Accordingly, it never causes such a widespread dissection of the vertebral bodies or as extensive deformity as the thoracic abscesses. However, it much more frequently reaches the surface where it is prone to point and become secondarily infected in which case it constitutes a much more serious menace to life.

SURGERY OF THE BONES, JOINTS MUSCLES, TENDONS, ETC.

LEZER E. Operative Correction of Deformities of the Feet (Operative Umformung bei Fehlbildungen des Fusses). *Deutsche Zeitschr. f. Chir.* 1929 cxxx: 7.

Operative treatment is indicated only for feet of adults with secondary bony changes and permanent joint deformities which cannot be further benefited by orthopedic procedures. Since operative interference aims at restoration of the normal form and function all procedures which destroy joints and result in ankylosis should be discarded. Instead of the usual osteotomies Lezer employs only those which leave the joint intact.

In cases of complete flat foot Lezer begins with an osteotomy resembling a malleolar fracture. First through a small longitudinal incision he chisels obliquely through the fibula just above the external malleolus and then through an internal curved incision he loosens the internal malleolus in such a way that its posterior edge is left intact in order that the firm support to the tibia posteriorly will not be disturbed. After removal from the exposed surface of the tibia of a wedge-shaped segment with its base directed upward and anteriorly the internal malleolus is displaced somewhat forward by means of a U-shaped nail and again fastened with strong tension on the deltoid ligament which has been well loosened on both sides. This method has the advantage of making the correction in the joint itself and at the same time correcting any torsion in the region of the malleolus and any spreading of the angle formed by the two malleoli and the end of the tibia.

As the second stage of the operation a wedge-shaped piece is removed from the navicular bone and a curved fragment from the talus which are exposed by lengthening the original incision over the internal malleolus and displacing all tendons and fascia from the inner border of the skeleton of the foot. In this manner it is possible without injury to the joints to correct the abduction in the anterior part of the foot without resorting to Perthes' method of inserting a wedge into the external border and without lengthening the tendon of the peroneus. The operation is completed by shortening the tendon of the tibia posteriorly after section of the lacinate ligament and displacing the tuber calcanei downward by means of a wedge obtained from the epiphysis of the tibia by an inverted T-shaped cut and inserted bone

mentally into the calcaneus beneath the insertion of the tendon of Achilles. After the operation a plaster dressing is left on for three weeks and at the end of that time exercises are begun.

In cases of club foot, the author begins with a dorsal flap incision which after section of all of the extensor tendons exposes the tarsus as far as the talus. He then performs the osteotomy which resembles a malleolar fracture but in this condition he removes a segment subperiosteally from the fibula in order that the posterior part of the foot may be brought into pronation. A curved segment with its base directed externally is then removed from the talus to obtain abduction of the anterior part of the foot and pronation of the entire foot. This is followed by wedge-shaped resection from the cuboid and in cases of very marked adduction and inward bending of the foot by osteotomy of the base of the first metatarsal or all of the metatarsals, lengthening of the tendon of the tibialis posterior and possibly also of the abductor hallucis and section of the plantar fascia lengthening of the tendon of Achilles and shortening and suture of the cut tendons of the extensor digitorum communis.

In cases of pes cavus a longitudinal incision is made on the lateral border of the extensor hallucis, a wedge shaped segment is removed from the navicular bone and a curved segment from the talus. Then an incision on the lateral side of the dorsal aspect of the foot a wedge is cut from the cuboid and in the presence of pronounced supination of the calcaneus an osteotomy resembling a malleolar fracture and subperiosteal resection of the fibula are done. In the most severe types of the condition detachment of the shortened plantar aponeurosis and of all the muscles and ligaments from the calcaneus is necessary. This is accomplished through a median longitudinal incision extending from the middle of the posterior border of the calcaneus to Lisfranc's joint. The structures to be loosened are shaved off by means of a very sharp thin chisel with care to preserve the periosteum.

In the claw foot form of pes cavus wedge shaped sections are removed from the metatarsals the widest being taken from the fifth metatarsal.

In cases of severe paralytic pes calcaneus operations on the tendons are usually insufficient because of the marked deformity especially of the talus. In such cases a wedge shaped segment with its base directed dorsally must be removed from the talocalcral joint. If the ankle joint is stiff a choice must be made between operative arthrodesis in the correct position or, when the muscles are in good condition a plastic operation on the ankle. SIEVERS (2)

FRACTURES AND DISLOCATIONS

Tavernier L. Recurrent Dislocation of the Shoulder (Les luxations récurrentes de l'épaule). *Presse Méd.* Par 1929 XXXVII 1391

The most important contributions to the literature on recurrent luxations of the shoulder were made by

Grégoire and Bazy who called attention to deformities of the head of the humerus and by Oudard, who devised the only operation which prevents recurrences.

The disorder occurs most frequently in athletes and epileptics and between the age of twenty and thirty years. Deformity of the head of the humerus is the predisposing cause but trauma is always the exciting cause.

It appears that disinsertion of muscles is unimportant. Laxity of the joint capsule has been noted frequently but most of the reports do not state the degree or the exact site of the distention and the importance of the condition is questionable. Tears of the capsule undoubtedly favor recurrence. Fracture of the anterior border of the glenoid fossa with stripping of the periosteum from the neck of the scapula is an exceedingly rare lesion.

The deformity of the humerus is of two types—a wedge shaped defect in the posterior aspect of the head and the hatchet shaped head. Both are probably congenital and seem to interfere with repair of the capsule.

Capsulorrhaphy is characterized by the author as a blind and illogical method which often gives only temporary results. Re-enforcement of the capsule by shortening of the tendons of the infraspinatus and subscapularis and the grafting of fascia lata also frequently fails. Suture of the rent in the capsule is rarely followed by a permanent cure. All surgeons have abandoned muscle sections and autoplasties. The only logical operations are directed to the bone lesions. Arthrodesis causes great disability. The tenodeses of Löffler and Henderson are followed by recurrence. Only operations that create an osseous buttress give permanent results. Of these the most satisfactory is the procedure devised by Oudard in which the coracoid process is divided longitudinally and the external segment is turned down to prolong the process. By this operation a buttress medial and anterior to the head of the humerus is formed.

In the discussion of this report, MAUCLAIRE stated that he had seen cases of recurrent luxation of the shoulder due to distention of the capsule detachment of the periosteum from the anterior border of the glenoid fossa a defect of the anterior border of the glenoid fossa and hatchet shaped deformity of the head of the humerus. He has obtained good results by building up the anterior border of the glenoid by bone grafts. ALBERT F. DE GROAT, M.D.

Baumann F. The Diagnosis of Fractures of the Elbow Joint. II. Fractures at the Lower End of the Humerus Exclusive of Supracondylar Fractures and Fractures at the Proximal End of the Radius (Beiträge zur Kenntnis der Frakturen am Ellbogengelenk. II. Brüche am unteren Ende des Humerus ausser Supracondylar und Brüche am proximalen Ende des Radius). *Beitr. z. klin. Chir.* 1929 XLVII 369

T shaped fractures of the lower end of the humerus usually occur in old persons, alcohol addicts and per-

muscle fibers at their origin on the bone. It disappears with rest, but recurs if the same sort of work or sport is again taken up. The more acute cases with pain and soreness apart from movement, are best treated by applying over the tender spot a small pad wet with a counter irritant and strapping the elbow in supination of about 135 degrees. Subacute cases with the formation of fibrous repair tissue require manipulation which stretches the extensors of the wrist to their full extent.

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SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS ETC

Lexer E. Operative Correction of Deformities of the Feet (Operative Umformung bei Deformitäten des Fusses). *Deutsche Zeitschr f Chir* 1929 cxxix, 7

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In cases of complete flat foot Lexer begins with an osteotomy resembling a malleolar fracture. First through a small longitudinal incision he chisels obliquely through the tubula just above the external malleolus and then through an internal curved incision he loosens the internal malleolus in such a way that its posterior edge is left intact in order that the firm support to the tubal posture will not be disturbed. After removal from the exposed surface of the tibia of a wedge-shaped segment with its base directed upward and anteriorly the internal malleolus is displaced somewhat forward by means of a U shaped nail and again fastened with strong tension on the deltoid ligament which has been well loosened on both sides. This method has the advantage of making the correction in the joint itself and at the same time correcting any torsion in the region of the malleolus and any spreading of the angle formed by the two malleoli and the end of the tibia.

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Quainance P. A. Fractures of the Transverse Processes of the Lumbar Vertebrae. A Report of Thirty Three Cases. *Arch Surg* 1920 xix 698

In eighteen of the thirty three cases reviewed by the author, the fracture was caused by direct external violence in one case by displacement of the ilium, and in two cases by indirect violence from a sudden muscle pull. In the others the mechanism of the injury was not clear.

The most valuable aid in the diagnosis is localized tenderness on pressure over the injured process. Swelling and ecchymosis are seldom present and aching muscle spasm and weakness so common in all back troubles that they are of no value in the differential diagnosis. Roentgen ray examination is of aid in determining whether the fracture is fresh or old.

The patient should be placed at rest in bed and partial immobilization by means of adhesive strapping should be continued until callus formation has begun. Stimulation of the circulation by heat is of value to diminish pain and hasten repair. Later active and passive motion and general light massage should be carried out until the maximal return of function is obtained.

In a few of the cases reviewed there were no symptoms. In some of those in which the fracture had occurred several years previously a diagnosis of back strain had been made. In seventeen cases (more than 50 per cent) the spine was in flexion at the moment of the injury.

The processes most commonly fractured are those of the third and fourth lumbar vertebrae. Those of the first and second escape injury because of their protected position.

Union occurred in 50 per cent of the cases reviewed. Failure of union seemed to be due to wide separation of the fragments.

The incidence of permanent disability is sometimes estimated as high as 40 per cent. In most of the cases reviewed the period of temporary disability ranged from one to three months but in a few it was between six and seven months. The duration of disability is in direct ratio to the number of processes fractured. Disability is sometimes psychic, when the patient is unaware of the nature of the injury he may continue with his usual work with very little complaint, but when he discovers that a bone is broken he becomes totally disabled for several weeks.

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WILLIAM A. CLARK M.D.

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of the accident cases in the mining districts of Westphalia, a study of the end results of various types of fracture has been begun.

Although there have been numerous reports of cases of fracture of the patella, there have been few which have dealt with the treatment and results in large series of cases. The author reports the results of his study of the material of the last twenty years from Sections 1, 2 and 3 of the Miners Cooperative Society of Bonn Bochum, and Clausthal. The material of the Cooperative Society is particularly suitable for such a study because all of the patients are kept under observation until a maximal return of function has been obtained and because the treatment is carried out not by a master surgeon and his pupils but by a number of physicians in large and small hospitals the results being therefore representative of those obtained by the practitioner.

In the material reviewed by Rostock there were 154 cases of fracture of the patella. This number when compared with the total number of injuries treated shows that patellar fracture is infrequent in the mines. In most instances it occurs in healthy men in the prime of life. Sixteen cases were treated by peripatellar wiring, 45 by wire suturing, 38 by silk and catgut suturing, 51 by conservative measures, and 4 by other methods. Fibrous union resulted in 53 cases, osseous union in 95 and ankylosis of the knee in 6.

Formerly conservative treatment was the method of choice. In the development of the operative treatment the Trendelenburg Clinic has made particularly valuable contributions. After Thiem's report to the Surgical Congress in 1905 operative treatment became the more popular but it has not yet been universally accepted. In some cases roentgen examination shows only slight fissures in the patella which do not require surgical intervention. In borderline cases the decision as to the most suitable form of treatment is not easy. In determining the indications for operative suture it appears advisable to roentgenograph the flexed knee, a suggestion by Schultze. When the roentgenogram so made shows that the fragments are not widely separated suture is unnecessary and conservative measures will be sufficient. Of the conservatively treated cases reviewed by the author osseous union was obtained in 43 per cent and fibrous union in 57 per cent. The relatively high incidence of osseous union indicates that in many of these cases there were fissures of the patella without much displacement of the fragments.

Before discussing the operative methods, Rostock reviews the various incisions employed to expose the patella. Volkmann's incision was used in 40 per cent of the cases, Hahn's incision in 34 per cent, Kocher's incision in 30 per cent, Textor's incision in 9 per cent and other incisions in 4 per cent. As all of these are satisfactory it makes little difference what skin incision is chosen.

Of the various operative procedures the author discusses first the suture of the periosteum and lat

sons with arteriosclerosis. The shape of the line of fracture is almost always the same. The line runs from the supracondylar fossa in the direction of the radio ulnar joint or to a point more to the ulnar side. The transversely running line of fracture nearly corresponds to that of supracondylar fractures. The treatment of fractures of this type without marked displacement consists in fixation for a few days and early motion carried out carefully so as not to cause displacement of the fragments. When the fragments are displaced it is best to establish extension through the ulna by traction on the humerus held in the vertical position. In compound fractures communicating with skin wounds bandaging of the fragments must be avoided. In such fractures extension on the humerus in the vertical position is doubly convenient as it facilitates dressings. Under certain conditions the largest fragments may be united by screws or nails.

Fracture of the lateral condyle of the humerus occurs most frequently in the first decade of life. It results from a fall on the hand in which the force is transmitted through the radius from a fall on the olecranon with direct transmission of the blow onto the condyle, or from forceful abduction of the more or less extended arm at the elbow. Conservative treatment is advisable only in cases without displacement or with only very slight displacement of the fragments. In all other cases operation must be done. If the fragment is well preserved and apparently still has a good blood supply reduction followed by fixation with a nail or screw may be attempted. If this does not give a good result very quickly the fragment should be extirpated. Extirpation should be done also in all cases in which the fragment has been completely separated or broken into small pieces. When there is any doubt as to whether reposition or extirpation is the better procedure extirpation should be chosen. At the site of an extirpated fragment a regeneration occurs which serves in maintaining the mobility of the joint and is of value especially in preventing gradual external luxation of the bone of the forearm. The late results following extirpation of the fragment are usually good. An inaccurately replaced fragment does not heal with bony union and by filling in the area of lost tissue, prevents the regeneration of the condyle. In the course of decades a slowly increasing pathological cubitus valgus and an upward gliding of the bones of the forearm on the outer side of the humerus result. Not rarely, the increasing valgus position causes injury of the ulnar nerve even decades after the fracture.

Avulsion of the median epicondyle is a common occurrence. Its prognosis is good. Even when the avulsed epicondyle is nailed to the site of the fracture and even when it is not displaced it heals with fibrous union instead of bony union. If the epicondyle is far removed from its site of fracture surgical restoration of the lateral ligaments is indicated. It makes little difference whether the fragment is nailed or excised provided the ligamentous apparatus is re-

stored by the procedure. The epicondyle breaks off in a larger area than corresponds to its nuclear area. As a rule the elbow joint is opened with the avulsion. Not rarely, the fragment is displaced into the joint. When this occurs its excision is absolutely necessary. In the course of time a fragment which is not extirpated is changed into a round form with a new structure. In the place of excised fragments very similar new structures (pseudofragments) are formed. Bone shadows in the deeper portions of the ligaments and in the external lateral ligament are shown by the roentgenogram much more frequently than is generally assumed. Often such shadows can be observed even years after cure of the luxation. They may persist but occasionally they retrogress. A knowledge of their frequency and of the multiplicity of their forms may prevent errors.

In a case of discondylar fracture of the humerus in a girl twenty one years of age the broken-off trochlea was immediately removed, a good result being obtained.

The breaking off of the lateral epicondyle of the humerus is a very rare injury and apparently does not occur as an avulsion fracture. The author reports two cases due to direct force. The prognosis is good. The treatment consists of immediate active mobilization. The diagnosis of this injury can be made only with the aid of the roentgenogram.

Fractures of the capitulum and of the neck of the radius are due as a rule to a sprain. This force produces either longitudinal fractures in the head of the radius (chisel fractures) or by forcing the radial neck into the head of the radius causes transverse fractures sometimes associated with lateral deviation of the site of fracture. In rare cases the two forms are combined. These injuries are very often associated with luxation fracture of the olecranon and injury of the lateral condyle of the humerus and of the coronoid process of the ulna. When the fragments are not dislocated or show only slight dislocation the treatment may consist of immobilization for from six to ten days followed by increasing active motion and massage. The results in such cases may be very good. When there is marked dislocation operative revision is indicated. In this procedure care must be taken to protect the deep branch of the radial nerve. In many cases the fragments are completely or almost completely separated and must be removed. In cases of fracture of the head of the radius the results may be very good or there may be partial inhibition of flexion and extension. Rotation is usually well preserved. Secondary arthritis is common especially in old persons. If the head of the radius is entirely broken off reposition is to be considered provided there is a sufficient bridge of tissue to assure adequate nutrition. As a rule the completely broken off head must be extirpated. The result may be absolutely favorable with complete maintenance of mobility but in cases with an extra articular fracture surface there is great danger of radio-ulnar synostosis with complete loss of the power of rotation.

L. Lutz (2)

Quaintance P A Fractures of the Transverse Processes of the Lumbar Vertebrae A Report of Thirty Three Cases *Arch Surg*, 1920, xix, 958

In eighteen of the thirty three cases reviewed by the author, the fracture was caused by direct external violence in one case, by displacement of the ilium and in two cases by indirect violence from a sudden muscle pull. In the others, the mechanism of the injury was not clear.

The most valuable aid in the diagnosis is localized tenderness on pressure over the injured process. Swelling and ecchymosis are seldom present and aching muscle spasm and weakness are so common in all back troubles that they are of no value in the differential diagnosis. Roentgen ray examination is of aid in determining whether the fracture is fresh or old.

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Wire suture of the patella resulted in osseous union in 67 per cent of the cases, fibrous union in 24 per cent and ankylosis of the knee in 9 per cent. Complete return to working function was obtained in only 40 per cent.

Peripatellar wiring comes into consideration chiefly for fractures with numerous small fragments in which wire suturing cannot be done. Suture of the periosteum with silk or catgut is also applicable in such cases, but peripatellar wiring assures firm adaptation of small fragments. In the cases reviewed, peripatellar wiring resulted in osseous union in 63 per cent, fibrous union in 25 per cent, and ankylosis of the knee in 12 per cent. The anatomical results were satisfactory, but the functional results were less favorable as complete restoration of working capacity was obtained in only 19 per cent.

The author shows the results of the different methods of treatment by means of curves which demonstrate the average limitation of working capacity during each month of the first four years and then for every year. It is quite remarkable that the curves of peripatellar wiring, wire suture, silk or catgut suture, and conservative treatment are alike except for minor variations. It is therefore evident that it is immaterial what kind of patellar suturing is done or whether in the absence of dislocation of the fragments conservative treatment is used. The results with regard to the restoration of working capacity are by and large about the same.

Another curve was plotted for the cases with complete restoration of working capacity. This shows that wire suture and conservative treatment were equally effective. However, it must be remembered that the conservatively treated cases were the more favorable cases with very little separation of the fragments. The results of silk and catgut suture were somewhat less favorable. Those of peripatellar wiring were surprisingly poor. Still poorer were those of secondary suture and those obtained in complicated cases.

Chronological curves plotted for the various methods of treatment show that in recent years the silk or catgut suture has been done more frequently and that there has been an increase in the incidence of osseous union. The occurrence of ankylosis of the knee has remained constant. Ankylosis is to be ascribed

exclusively to disturbances of wound healing. Such disturbances cannot be prevented with absolute certainty. In cases with ankylosis is the permanent reduction of working capacity is considerable. On the other hand, the difference in the functional results of osseous and fibrous union is not great for while osseous union gives better anatomical results it does not always assure good functional results. Occasionally ideal anatomical healing is associated with marked limitation of function. In the cases reviewed, complete restoration of working capacity was obtained in 40 per cent of those with osseous union and 38 per cent of those with fibrous union. Curves plotted for the limitation of function over a period of time in both types of cases were practically alike. Accordingly as far as working capacity is concerned it is quite immaterial whether there is fibrous or osseous union, and while the surgeon should attempt to obtain osseous union such an effort is not essential for good function. ZILLMER (2)

HUBMANN 1. Fractures of the Tibiotarsal Joint with Particular Regard to Fracture with Posterior Luxation and Its Treatment (Leber der Frakturen des oberen Sprunggelenkes mit besonderer Berücksichtigung der hinteren Luxationsfraktur und ihrer Behandlung). *Beitr. klin. Chir.* 1919, 417.

This is a review of the varieties, manner of occurrence and results of treatment of fractures of the tibiotarsal joint based on 200 cases, 53 of which have been under observation for at least a year. Among these there were 21 malleolar fractures complicated by posterior luxation.

The oblique form of fracture of the external malleolus (supramalleolar longitudinal fracture) must be considered the typical fracture of the tibiotarsal joint. Its production is due essentially to the anatomical conditions and is independent of the character of the force applied. The anteriorly directed longitudinal fracture described by Benig is a special form of oblique fracture of the external malleolus. In the cases reviewed there were 83 fractures of the external malleolus and 16 fractures of the internal malleolus. In the production of the 11 typical epiphyseal fractures the mechanism was the same as that concerned in the typical malleolar fracture with the formation of Volkmann's triangular fragment in the adult. Every third fracture of the tibiotarsal joint exhibited a larger or smaller Volkmann fragment on the posterior border of the tibia.

The 21 fractures with posterior luxation were all produced by plantar hyperflexion. In only 2 cases were there no changes on the posterior border of the tibia.

In general it was found that the malleolar fractures became more severe with increasing age. The average age of patients with fracture of the external malleolus was thirty nine years; that of patients with fractures involving both malleoli, forty three years; and that of patients with fractures complicated by posterior luxation, fifty three years. This observa-

tion at least partially explains the fact that the results of fractures especially fractures of the ankle, become poorer with increasing age.

The treatment in the cases reviewed consisted of immediate reposition with maintenance of position usually by adhesive plaster or the wire extension method of Beck. Active movements were begun early. In cases of fracture with posterior luxation the period of treatment always exceeded four months and frequently six months.

In the 53 cases in which a follow up examination was made there was no example of simple fracture of the external malleolus. Of the 10 patients who were treated for fracture of the external malleolus with avulsion of a triangular fragment from the posterior border of the tibia 1 had a slightly everted and flattened foot (pes planovalgus) and was receiving compensation for disability of 10 per cent. Of the 18 patients who were treated for fracture of both malleoli 15 had had no subsequent trouble of any kind but 3 who had had a lateral luxation had developed pes valgus and were receiving compensation for disability of from 10 to 30 per cent. Of 14 patients who were treated for bimalleolar fractures with a Volkman triangle, 10 were free from symptoms 3 showed a mild pes valgus and 1 had arthritis deformans. Of 11 patients who had been treated for malleolar fracture with posterior dislocation 6 were free from symptoms but 5 had a disability of from 10 to 30 per cent. In 4 cases the disability was due to arthritis deformans. In 1 case the arthritis had resulted in complete ankylosis and in 1 it had reduced the mobility of the joint by 50 per cent. In

both of the latter cases the decrease in the mobility of the joint developed after the patient had been discharged. In neither could it be ascribed to faulty reposition. It is therefore evident that malleolar fractures with posterior luxation do not in themselves give an indication for operation. Reposition is possible with the usual non operative methods. The paucity of callus formation in the internal malleolus is well known. In 6 of 13 cases of fracture of the internal malleolus a pseudarthrosis developed later and was demonstrated at operation. In 3 of the 6 cases there were symptoms. The symptoms were due to a lateral displacement of the foot which explained also the failure to heal. As the 3 other patients with pseudarthrosis of the internal malleolus were free from any noteworthy symptoms it appears that pseudarthrosis of the internal malleolus does not in itself cause noteworthy disturbances.

In occasional case with severe malleolar fracture there developed in spite of good primary reposition and even after the corrected position of the fragments had been maintained for from eight to ten weeks a lateral displacement of the talus with the production of pes valgus or a diastasis between the tibia and fibula. In such case a longer period of fixation and freedom from weight bearing is necessary. Next to arthritis deformans the most trouble some sequela of malleolar fracture is traumatic pes planovalgus. In cases of malleolar fracture with a tendency toward lateral displacement of the talus relief from weight bearing must be continued for from eight to twelve weeks according to the severity of the condition.

WAXKE (2)

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position to ward off gangrene but does not eradicate the disease. The experimental injections reported give positive anatomical proof of the vasodilating effects of sympathetic ganglionectomy and confirm in general the clinical impression that the older the person the less adequate the collateral circulation. After the arteriosclerotic age is reached and arterial occlusion develops, the ultimate amount of collateral circulation is usually inadequate and not comparable to that seen in younger persons with thrombo-angitis obliterans. This affords a good reason for not attempting vasodilating operations such as sympathetic ganglionectomy in the treatment of older patients suffering from arteriosclerotic disease. It explains the frequent failures in attempts to save stumps below the knee in cases of arteriosclerosis and the greater frequency of success following the same effort in cases of thrombo-angitis obliterans.

BLOOD, TRANSFUSION

Greenwald H M, and Sherman I. Congenital Essential Thrombocytopenia. *Am J Dis Child* 1939 xxxviii 1243

The authors give a brief review of cases of congenital essential thrombocytopenia reported in the literature and report a case of their own. Their

own case was that of a normally delivered infant which showed nothing unusual until the sixth day when a rash appeared over the neck and shoulders. On the tenth day the infant was cyanotic and had slight hemorrhages from mucous membranes and the bowels. There was an extensive purpuric eruption, and the temperature was persistently low.

Examination of the blood revealed a high red and white cell count and a hemoglobin content (Sahli) of 122 per cent. The differential blood count showed polymorphonuclear leucocytes 57 per cent, lymphocytes 41 per cent, myelocytes 1 per cent, transitionals 1 per cent, 15 nucleated red blood cells, and 30,000 platelets. The coagulation time was increased. The Wassermann reaction was negative.

The child died on the tenth day. Autopsy revealed the presence of petechial hemorrhages on the surface of the right lung, a communication between both auricles and ventricles, congestion of the liver, and a marked reduction in the number of megakaryocytes in the bone structures.

This case substantiated Frank's theory that thrombocytopenia depends upon a lack of megakaryocytes or their inadequate function.

CLARE CE V BATEMAN M D

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Horton B T A Study of the Vessels of the Extremities by the Injection of Mercury *Surg Clin North Am*, 1930 x 159

Metallic mercury was injected into the arterial tree in forty two recently amputated extremities. Seventeen of the extremities were affected by thromboangitis obliterans and nineteen by arteriosclerotic disease. The others represented a miscellaneous group of conditions namely osteomyelitis sarcoma epithelioma, club foot and ununited fracture.

The youngest patient with thromboangitis obliterans was thirty one years of age, and the oldest, seventy three years. Of those with arteriosclerosis the youngest was forty eight years and the oldest seventy eight years.

In the cases of thromboangitis obliterans there were marked variations in the appearance of the arterial trees which depended upon the extent of the occlusive process in the vessels. In some specimens the arterial tree appeared almost normal and in others it had been entirely occluded and replaced by a collateral circulation which for a long period of time was sufficient to supply the extremity with an adequate amount of blood. In the average specimen the occlusive process was diffuse but patchy in its distribution and the formation of collateral vessels was marked. This was the most striking feature observed in cases of thromboangitis obliterans. From the appearance of the roentgenograms it would seem that thrombosis of a segment of a vessel occurs collateral circulation develops above it and then an other segment closes. The relation of the rapidity and extent of the occlusive process to the formation of collateral vessels determines the ultimate fate of the limb. If the segments affected are large and the closure is rapid the prognosis is poor. If the segments affected are small and the closure is slow the prognosis is good.

In one case in which bilateral lumbar sympathetic ganglionectomy had been performed about one year prior to the amputation the mass flowed through the capillary bed and into the venous system after filling the arterial tree. In one case the mercury did not pass through into the venous system to any extent even though the patient had been subjected elsewhere to periaxillary sympathectomy of the popliteal artery by the Lenche-Handley method three weeks prior to the amputation.

In the cases of arteriosclerosis the results of observation were fairly constant. In most of the specimens the main arteries in the leg and foot were patent but were reduced in caliber whereas in many specimens collateral circulation was absent to a rather marked degree. Frequently however oc-

cluded segments were observed in the main arteries and in a few specimens collateral circulation was well developed.

The filling ratios in cases of thromboangitis obliterans and arteriosclerosis were essentially the same. This indicates that the circulation in the two groups of cases must be reduced to essentially the same level before amputation becomes necessary. In diabetic gangrene the filling ratio was slightly less than in the average case of arteriosclerosis not associated with diabetes mellitus. In six of the seventeen cases of thromboangitis obliterans and fourteen of the nineteen cases of arteriosclerosis the occlusive process was so marked that the author was unable to inject the arterial tree. In five cases the occlusive process was so marked that it was impossible to inject the material into the arterial tree even with the use of pressure as high as 200 mm Hg.

In cases of diffuse osteomyelitis of the tibia the findings in the roentgenograms with reference to the arterial tree were essentially the same as those in arteriosclerosis. The main vessels in the leg and foot were open but collateral circulation in the leg and to a certain extent in the foot was practically absent. This emphasizes that diffuse osteomyelitis of the long bones of the leg affects not only the bone but also the blood vessel of the extremity to the extent that the collateral circulation of the leg may be partially or in extreme cases almost totally occluded.

Marked changes were not observed in the arterial tree in a leg which was amputated because of a severe radium burn. They were absent also in a leg amputated because of sarcoma except that the vessels were slightly constricted and distorted as they passed through the sarcoma which involved the upper third of the leg.

In a case of ununited fracture in the lower third of the tibia injection of the arterial tree showed definite constriction of the anterior tibial artery opposite the site of the fracture and a marked diminution in the blood supply of the region of the fracture. The fragments were in good apposition. The decrease in the blood supply was so definite that it may have been a factor in the non union of the bone.

The amount of the injection mass required to fill the arterial tree in cases of thromboangitis obliterans and arteriosclerosis varied a great deal from that reported by Lewis and Reichert.

Lumbar sympathetic ganglionectomy does not produce a cure in cases of thromboangitis obliterans. In the three cases which are reported the occlusive process was progressive in spite of the increased flow of blood to the extremities following the operation. The increased flow of blood to the extremities following amputation places the patient in a better

It has been found that injections of the Calmette Guérin bacillus provoke a positive tuberculin reaction within about two months.

Of 34 nurses who were not vaccinated, 14 developed more or less serious tuberculous lesions where as of 136 vaccinated nurses who were serving on identical services only 3 became infected and these developed only slight signs of pleurisy.

ALBERT F. DE GROAT, M.D.

ANÆSTHESIA

Koenig, Death After Avertin Narcosis (Tod nach Avertinnarkose). *Zentralbl. f. Chir.* 1929, p. 1894.

This is a report on the death of a woman forty-two years old who was operated upon for chronic cholecystitis under anæsthesia induced with avertin and ether after the administration of magnesium sulphate. One hundred and twenty grams of ether were used. On the fourth day after the operation the patient became restless and delirious and her pulse rate and temperature increased. On the evening of the fifth day she died in a maniacal attack. Autopsy disclosed a markedly icteric liver, hæmorrhages in the renal pelvis and cerebral oedema. The liver showed central atrophy and fatty infiltration of the cells. Therefore essentially all of the manifestations of acute yellow atrophy of the liver were presented as in a similar case observed by Pribram. The liver function test which was carried out before the operation gave an unsatisfactory result, but its significance was not sufficiently appreciated. The author emphasizes that a functional test of the liver is absolutely essential before avertin narcosis. When the result is unsatisfactory avertin narcosis is contra-indicated.

In the discussion of this report, GOETZE called attention to the fact that ether alone may cause damage to the liver.

KILLIAN emphasized the advantages of a pantopon-magnesium sulphate mixture which greatly diminishes the psychic trauma of the anæsthesia and assures freedom from pain for a considerable

period after the operation. He stated that when the body is flooded with magnesium ions the irritability of the nervous system is diminished and the action of the pantopon is increased. Kirschner's experience with the intravenous use of avertin has been confirmed by Killian by animal experimentation. A small dose of avertin given intravenously induces immediate narcosis which passes off in a few minutes without any unfavorable after effects. The only danger is overdosage from too rapid administration. In experiments on animals death has been caused by such overdosage. As avertin is similar in its molecular structure to chloroform it is advisable to use for such injection some other drug such as hedonal which is completely destroyed in the body. Intramuscular injection may be safer than intravenous injection and permits as accurate control of the dosage. Koenig's fatal case is the fifty-second on record in which there was no doubt that the anæsthetic was the cause of death. As Killian knows of six that have not been reported, he believes that many deaths due to avertin narcosis have not been included in the statistics. According to the literature, severe circulatory collapse and respiratory disturbances threatening life are about three times as frequent as death. Killian reported a serious accident with avertin in the case of a man sixty-two years old who was anæsthetized with 5.13 gm. of avertin after preparation with pantopon and magnesium. The operation (electrocoagulation of a parotid tumor) was followed by severe dyspnoea and cyanosis lasting for eight and one-half hours. As the result of failure of the cough reflex the lungs became filled with mucus. Improvement was brought about by lowering the patient's head. The alkali reserve which before the operation was 60 c. cm. per 100 c. cm. of plasma fell to 41 c. cm. The patient recovered.

REHM emphasized the fact that the normal liver possesses great resistance to anæsthetic toxins even to chloroform but that the damaged liver may react against even harmless drugs such as ether, with marked changes. MAX STRAUSS (Z.)

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Walker I J How Can We Determine the Efficiency of the Surgical Mask? *Surg Gynec & Obst* 1930 1 266

This study was suggested by the occurrence of three deaths from hæmolytic streptococcus infection in cases in which the operative wounds were believed to be clean and recovery was expected. Subsequent investigation showed that three of the six persons present in the operating room were carriers of the hæmolytic streptococcus and that the masks used to cover the nose and mouth were not germ proof.

A number of tests were therefore carried out to determine the efficiency of various types of masks. For these tests a person was selected whose mouth contained a large number of hæmolytic streptococci. This subject while wearing the mask spoke for a period of time before an open Petri dish and after incubation of the medium for forty eight hours the colonies were counted. Of seven masks of various types which were subjected to this test not one was found to be germ proof. Accordingly efforts were made to devise a mask that would meet the requirements of the test. A mask which has proved satisfactory consists essentially of a piece of rubber 6 in square between two pieces of gauze 10 in square. The edges of the gauze are turned in and stitched on three sides. The third side is left open to facilitate replacement of the rubber when necessary. At the upper part of the mask which covers the area over the nose and mouth the rubber is stitched. Also in the upper part there is a small piece of aluminum which can be bent to fit the nose. Tapes are attached to each of the four corners. The mask is worn in the usual way. It costs very little and can be laundered and sterilized as often as five times.

VERNE G BURDEN MD

Fitz Hugh, T Jr Postoperative Hæmorrhage in Hæmorrhagic Conditions. Prognosis Prevention, and Control. *Med Clin N Am* 1930 xii 889

The tests which the author finds of most value in the diagnosis and prognosis of hæmorrhagic conditions are (1) a complete blood count including a differential count with Wright's stain and a reticulocyte count with cresyl blue stain and occasionally the oxydase stain (2) a platelet count (3) a determination of the coagulation time made on venous blood, (4) a determination of the bleeding time (5) studies of clot retraction and (6) the tourniquet test.

Fitz Hugh believes that no one pre-operative test alone should be relied upon to determine

operability from the standpoint of postoperative hæmorrhage. The minimal pre-operative tests should be the determination of the coagulation time of venous blood, the determination of the bleeding time and examination of a stained film for evidence of marked abnormalities in the erythrocytes, leucocytes and platelets.

A brief survey of the more important types of hæmorrhagic diatheses is presented together with a review of hæmatological methods of determining operability from the standpoint of postoperative hæmorrhage and methods for the prevention and treatment of such hæmorrhage.

In the author's opinion the best pre-operative preparation of patients with obstructive jaundice is the intravenous administration of glucose which stimulates hepatic regeneration and reduces the coagulation time.

LOUIS P GILBERT MD

Fuller C J An Analysis of Postoperative Pulmonary Complications. *Lancet* 1930 ccxvii 115

The postoperative lung complications in 2478 cases are reviewed and classified. The most frequent were bronchopneumonia and bronchitis and the next most frequent infarction and massive collapse of the lung. The incidence of lung complications was highest (22.6 per cent) after operations on the upper part of the abdomen. Of the operations in this group those performed for ruptured peptic ulcer were followed by lung complications most frequently (40 per cent of the cases). The length of time required for the operation did not seem to have any direct relation to the incidence of pulmonary complications.

SAMUEL PERLOW MD

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Heimbeck J Anti Tuberculosis Vaccination of Student Nurses at the Ulleval Hospital Oslo by Subcutaneous Injections of Calmette Guérin Bacillus Vaccine (Sur la vaccination préventive de la tuberculose par injecton sous-cutanée de la vaccine Calmette Guérin chez les élèves infirmières de l'hôpital Ulleval à Oslo). *Presse méd Fr* 1930 xxxvii 1391

For a considerable time it has been the practice at the Ulleval Hospital Oslo to vaccinate student nurses who present a negative von Pirquet reaction. The reason is that if not vaccinated these nurses are apt to develop more or less serious tuberculous lesions shortly after they begin to work in the wards devoted to tuberculous patients whereas nurses reacting positively to the von Pirquet test escape the infection entirely or develop only benign lesions.

is a relatively benign growth, as such as to serve as a valuable diagnostic aid, especially when the primary tumor has been previously excised and the patient presents himself with an abdominal or other metastasis.

Another tumor in which the reaction to irradiation is sufficiently characteristic to serve as a valuable diagnostic sign is the true benign giant cell tumor of bone. About ten days after exposure to a moderate dose of rays of medium wave length the tumor begins to swell and the swelling is accompanied by redness of the skin and increased pain. After about two weeks, the swelling redness and pain subside and disappear and new bone is gradually deposited in the tumor. In the course of from six to twelve months the tumor may be replaced by solid and healthy bone. The diagnosis of giant cell tumor involves a grave responsibility because some of these neoplasms contain malignant elements.

The majority of malignant tumors of bone are only slightly or moderately susceptible to irradiation. Few such tumors are ever cured permanently by any method of treatment. Nevertheless in this group also the reaction to roentgen or radium rays may sometimes help in establishing the diagnosis.

MISCELLANEOUS

Chaneles J. General Changes and Changes in the Teeth Produced by Fluorine in the White Rat. Ultraviolet Irradiation in Experimental Fluorosis (Alteraciones generales y dentarias producidas por el fluor en la rata blanca. La radiacion ultravioleta en la fluorosis experimental). *Rev Soc argent de biol* 1929 v. 3, 1.

The author reports experiments in which rats were given sodium fluoride in a 5:1,000 aqueous solution with their food and some of them were treated with ultraviolet irradiation beginning three weeks after the beginning of the experimental intoxication.

The growth of the animals was very greatly retarded by the fluorine but the retardation was considerably less in the animals given ultraviolet irradiation.

In addition to the retardation of growth the fluorine caused changes in the teeth. The teeth lost their sheen and showed dark spots. The upper incisors grew long and curved while the lower ones were smaller than normal. The teeth broke easily. The elongation and curving of the upper incisors were less marked in the animals that were given ultraviolet irradiation. The changes in the teeth seemed to be due to a disturbance of calcium metabolism either from changes in the organs which regulate calcium metabolism particularly the parathyroids or from a local disturbance in the tissues to be calcified.

AUDREY G. MORGAN M.D.

Chaneles J. The Effects of Chronic Fluorine Intoxication in the White Rat With and Without Actinic Irradiation on the Chemical Com-

position of the Blood, Bones and Teeth (Efectos de la intoxicacion cronica por el fluor en la rata blanca con y sin tratamiento actinico, sobre la composicion quimica de la sangre los huesos y los dientes). *Rev Soc argent de biol* 1929 v. 3, 36.

In the experiments reported the animals of Group A were given fluorine in their food and were irradiated with the ultraviolet rays; those of Group B were given fluorine but were not irradiated and those of Group C were used as controls. Three months after the beginning of the experiments they were killed.

In the animals of Group A the blood calcium was 10.3 mgm. per 100 cc. of serum, in those of Group B it was 10.9 mgm. and in those of Group C, it was 10.6 mgm.

In the teeth the calcium phosphorus and magnesium were somewhat decreased in the rats of Group A as compared with the controls but in the animals of Group B the amount of calcium and phosphorus was somewhat higher and the amount of magnesium was somewhat lower than in the controls.

In the femora the differences were much less. In the rats given fluorine with or without irradiation the amount of calcium was somewhat less and the amount of phosphorus and magnesium was somewhat greater than in the controls.

AUDREY G. MORGAN M.D.

Chaneles J. General Changes and Changes in the Teeth Caused by Fluorine in the White Rat. Iodine in Experimental Fluorosis (Alteraciones generales y dentarias provocadas por el fluor en la rata blanca. El yodo en la fluorosis experimental). *Rev Soc argent de biol* 1929 v. 3, 40.

The experiments reported were carried out on four lots of white rats designated as Lots D, E, F, and G. Those of Lot D were given sodium fluoride with their food; those of Lot E, sodium iodide and those of Lot F both solutions at the same time. Those of Lot G were used as controls. The experiments were carried on for six months.

The animals of Lot D grew more rapidly than the controls for three months but after three months the females began to lose weight and after four months the males lost weight and at the end of the experiments they weighed 20 per cent less than the controls. There were no changes in the gait or activity of the animals, and fluorine cachexia did not develop until a few days before death. There were no change in the eyes except xerophthalmia at the end of the experiment in the case of one rat but the skin of some of the animals lost its silky appearance and slight nasal and vaginal hemorrhage occurred.

The animals of Lot F suffered more severely than those of Lot D. The females died at the end of the ninth week after having lost 63 per cent of their weight. The males lived to the end of the sixth month but lost 35 per cent of their weight. The general symptoms were the same as in Lot D. During the last week nasal hemorrhages occurred.

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Johnson C R *Stereoroentgenometry A Method for Mensuration by Means of the Roentgen Ray* *Am J Surg* 1930 viii 151

Stereoroentgenometry is defined as the process of determining the solid dimensions of a radio opaque object from its stereoscopic roentgenograms.

An opaque marker is placed on the object to be measured such as the pelvis and roentgenograms are made in the usual stereoscopic manner. The roentgenograms are then superimposed so that the opaque markers on both are in the same position and at various points pin pricks are made through the film below. When these perforations have been completed and the amount of shift can be measured at given locations on the lower film the film is put into a special apparatus.

In this apparatus two threads are arranged to represent the central ray of the X ray beam in its two positions which are used in making the stereoscopic films. These two threads are then run to points on the film one of which has been marked by the above described process of perforation in such a manner that they show the amount of shift of the shadow of the object to be measured. It is obvious that threads in such a position representing the two central rays will cross at some point in their course. It is at this point of crossing that the true location of the object has been. Thus for instance to measure a pelvic conjugate one would locate a ventral point by the crossed thread method and leave a marker to fix the location in space. A dorsal point would be similarly located and then by simply measuring the distance between the two markers with a ruler one would have the distance of the conjugate, or fetal head, or whatever is being measured.

WILBUR BAILEY M D

Dessauer, F *The Question of the Fundamental Biological Reaction of Radiation* *Radiology* 1930 xiv 2

This article is a report of experiments undertaken in an endeavor to determine the correctness of the author's hypothesis that the absorbed energy of radiation produces heat at discrete very small points which results in various biological reactions. The attempt was made to determine what happens in a solution of protein after radiation under exact conditions. The methods used and the results are described in detail. The findings are based largely on the number of particles in brownian movement as observed with the ultramicroscope. They are illustrated by numerous diagrams.

The results are said to go hand in hand with the reactions in the protein itself. Periodical appear-

ance and disappearance of particles in brownian movement seems to be a general property of colloidal protein solution. This fundamental reaction is produced in the same type from the relatively long wave length of ultraviolet light down to the shortest wave length of roentgen rays or gamma rays. Quantitatively the influence of the dosage, the time factor of the dosage and the period of latency can be studied. The observed fundamental reaction in the protein will be found to agree in detail with such a complicated effect as the erythema.

ADOLPH HARTUNG M D

RADIUM

Desjardins A U *The Reaction to Irradiation as a Means of Differentiating Certain Varieties of Tumor* *Brit J Radiol* 1930 vi 6

Knowledge of the specific radiosensitivity of different kinds of cells and of the coincident susceptibility of tumors derived from such cells makes it possible to distinguish certain tumors. The neoplasms most readily identifiable by the characteristic and exceptional sensitiveness of the lymphocytes of which they are largely composed are those which develop in the lymphatic or lymphoid structures generally. The reaction of such tumors is usually so exceptional and correspond so closely to that of normal lymphocytes that irradiation constitutes a valuable therapeutic test and makes it possible to recognize such tumors without regard to difference in their clinical features.

While it is undoubtedly true that the lymphatic system in general descends from the mesoderm it is true also that certain essentially lymphoid structures such as the thymus gland are derived from the ectoderm. Thus, the radiosensitivity of the lymphocytes wherever situated has served to differentiate a group of tumors which heretofore have been classified as primarily epithelial in character.

The only tumor which approaches the lymphoblastoma in susceptibility to irradiation is the pure embryonal carcinoma or seminoma of the testis. The reaction of the mixed or teratoid tumors of the testis is less rapid and less pronounced than that of the embryonal carcinoma and varies chiefly with the proportion of spermatogonial epithelium entering into their structure. Therefore while some of the mixed tumors undergo a considerable degree of retrogression this is almost never complete or lasting. While few embryonal carcinomata regress completely the degree of recession of such tumors is greater a certain percentage of them disappear completely and the effect of the treatment may last several years. The radiosensitivity of tumors of the testis in general except the true teratoma which

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Barcroft J Alterations in the Volume of the Normal Spleen and Their Significance *Am J M Sc* 1930 clxxix r

In experiments on dogs in which he exteriorized the spleen, Barcroft found that the spleens of pregnant dogs shrank to an "insignificant size" and became very pale during the last ten to fourteen days of pregnancy and that those of control dogs showed a marked but transient contraction during the period of heat. Surgical operations were followed by splenic contraction for as long as four weeks.

Barcroft suggests that splenic contraction is a compensatory mechanism for changes in the blood volume vasomotor changes in the vessel bed and possibly changes in the quality of the blood.

M HERBERT BARKER M D

Blalock A and Bradburn H Distribution of the Blood in Shock The Oxygen Content of the Venous Blood from Different Localities in Shock Produced by Hemorrhage by Histamine and by Trauma *Arch Surg* 1930 xi 26

The authors' experiments and findings are summarized as follows:

1 The oxygen content of blood from (1) the right side of the heart (2) the portal vein, (3) the femoral vein, (4) the external jugular vein (5) the renal vein and (6) the femoral artery was determined in dogs to which barbital had been given for varying intervals of time.

2 Similar studies were made after a low blood pressure had been produced by (1) hemorrhage (2) the injection of histamine, (3) trauma to the intestinal tract (4) trauma to the cerebrum and (5) trauma to one of the posterior extremities.

3 In the control experiments the oxygen content of blood from the right side of the heart and that of blood from the portal vein were approximately the same; that of blood from the femoral vein was usually lower, and that of blood from the external jugular vein was slightly higher. The oxygen content of blood from the renal vein was usually definitely higher than that of the mixed venous blood.

4 About the same relationship existed between the oxygen content of blood from the various sites after a low blood pressure had been produced by hemorrhage, histamine, and trauma to the brain.

5 The oxygen content of blood from the portal vein was much higher relatively after trauma to the intestines while that of blood from the extremities and head was low.

6 The oxygen content of blood from the femoral vein of a traumatized leg was high while that of

blood from the opposite extremity and the head was low.

7 The oxygen content of blood from the renal vein was relatively high in all of the experiments.

8 These observations suggest a local accumulation of blood at the site of trauma to a large area such as the intestinal tract or an extremity and are evidence against the action of a histamine like substance producing a general bodily effect.

EMIL C ROBINSON, M D

Rous P and Gilding H P Is the Local Vaso-dilatation After Different Tissue Injuries Referable to a Single Cause? *J Exper M* 1930 li 27

Lewis has advanced the theory that local vaso-dilatation in response to injury occurs through the influence of a substance derived from the damaged tissue. This substance, the "H substance," is always the same and is probably histamine. In a series of experiments upon human beings, the authors found that the response of the tissue to small scratches and to histamine injections was different. With each type of injury the typical wheal "flare and zone of pallor" were produced, but in the scratch experiments in which there was first a short period of venous congestion and then a longer period of arterial occlusion, Bier's spots appeared, coalesced, and eventually invaded and obliterated the initial reaction about the scratches, whereas in the histamine injection experiments performed on different subjects or simultaneously on the same subject, the sites of reaction remained uninvaded by Bier's spots and persisted as small purplish rings.

FRANK B BERRY M D

Mackenzie G M and Hanger F M Serum Disease and Serum Accidents *J Am M Ass* 1930 xciv, 260

Differences in susceptibility to serum are noted in the incidence of serum sickness. About 10 per cent of persons have no apparent manifestations of serum sickness even when large doses are injected. The North American Indian and the negro have a very low susceptibility. The sera from some horses causes more severe symptoms than those from other horses. When small amounts of serum are used, no manifestations of serum disease are noted in a large percentage of cases but when from 100 to 1000 c.c.m. are given intravenously evidence of serum disease will be apparent in as high as 93 per cent of the cases.

In patients treated with serum for the first time the incubation period is usually from six to twelve days. A previous injection of serum may shorten the incubation period. The usual symptoms of serum

In the animals of Lot E the iodide seemed to stimulate the growth of the males. The increased growth ended at the end of the third month. After that there was some loss but at the end of six months the animals still showed a gain of 17 per cent as compared with the controls. The females also gained but not so much. The animals of this lot were able to withstand cold much better than the others. Their general condition was good better than that of the controls and they showed no anomalies.

The animals of Lots D and F showed dental changes beginning on the thirty fifth day of the experiments. The teeth became a dirty white and the upper incisors grew long and curved. As the changes in the teeth resembled those noted in animals after removal of the parathyroids the author concludes that the organs regulating calcium metabolism are disturbed by fluorine.

AUDREY G. MORGAN M.D.

Chances J. Microscopic Changes in the Teeth of the White Rat Subjected to Chronic Fluorine Intoxication With or Without Actinic Irradiation. (Alteraciones microscópicas de los dientes de la rata blanca sometida a la intoxicación crónica por el fluor con y sin tratamiento actínico). *Rev. Soc. argent. de biol.* 1929 v 352.

In studies of the teeth of white rats subjected to chronic fluorine intoxication the author found that the changes were of the same nature in the

molars and incisors but were more intense in the incisors. The enamel showed irregular pigmentation or none at all. The prisms were narrow and undulating and their direction with relation to the surface of the dentine was more oblique than normal. The dark lines, or stripes of Retzius were very prominent.

In the dentine there was an exaggeration of the laminar striation giving a characteristic stratified appearance. The greater the intoxication the greater the number of layers the thinner the layers and the more marked the boundary lines between them.

The ameloblasts were shorter and thicker than normal and the nuclei more rounded. The enamel was irregular in thickness and in the formative zone showed profound erosions or hypoplasias and marked stratification. The arrangement of the prisms was irregular. The boundary line between the dentine and enamel was undulating. The pulp herniated into the dentine in some places as if the calcification had taken place irregularly with greater intensity in some areas than others. The broad dentinogenous zone was another sign of a disturbance of calcification.

The changes were of the same nature in rats treated by ultraviolet irradiation and those not so treated but were much more marked in the latter. Ultraviolet irradiation evidently neutralizes the action of the fluorine to a certain extent but does not overcome it entirely. AUDREY G. MORGAN M.D.

thrust ulcerative skin lesions and a maculopapular eruption the ulcerative lesions were found on microscopic study to be sharply circumscribed anæmic infarctions of the corium and epidermis due to thrombosis of the cutaneous vessels secondary to syphilitic obliteration of medium sized vessels at the border of the corium and subcutaneous tissues. The great size sharp borders scanty exudate and cone shaped form of the ulcers the absence of histological lesions of syphilis in their borders and the absence of spirochaetes in the lesions were explained by the secondary infarction process. The malignancy of the syphilitic process was evidenced by the almost complete involvement of the dermal vessels which led to obliteration of these vessels thrombosis and consequent infarction of large areas of the skin.

This is a new explanation of the cutaneous lesions of malignant syphilis. No case like it has been described in the literature. Whether the pathological findings will explain other cases appearing clinically as malignant syphilis or whether this case was unique remains to be determined from the study of other cases presenting a similar clinical appearance. If other cases should be found to exhibit the same picture of vascular syphilis obliteration of vessels secondary thrombosis and infarction more light will be thrown on the nature of the most severe forms of dermal syphilis. In the authors case there was an undoubted susceptibility to the spirochaetes on the part of the small blood vessels in various regions of the body. The patient was particularly resistant to treatment but this was in part only apparent since most of the seemingly syphilitic lesions of the skin were not directly syphilitic but were necrotic lesions of a secondary infarction. That the treatment was effective so far as the spirochaetes were concerned was shown by the enormous number of degenerating organisms found in the tissues. Just when this great destruction of spirochaetes took place it is impossible to say.

The case was unique also in the extensive visceral involvement (thyroid heart pancreas and urinary bladder). It must be remembered however that few autopsies and fewer microscopic studies have been made in cases of malignant syphilis.

The evidence suggested that the syphilis was acquired. If this is correct the patient was the youngest patient with acquired syphilitic myocarditis on record.

Microscopic study of the heart showed a small amount of subpericardial fat with serous atrophy. Beneath the endocardium the muscle presented marked fatty degenerative infiltration. Throughout the myocardium there were numerous diffuse lymphocyte and plasma cell infiltrations arranged around the smallest coronary arteries. Many areas showed the intermuscular single file arrangement of nuclei characteristic of syphilitic myocarditis. In other areas the cellular infiltrations were grouped in to larger masses suggesting milium gummata. Beneath the endocardium there were localized areas of cellular infiltration. In places this infiltration pro-

duced a thickening of the endocardium itself. There was no involvement of the larger coronary branches.

HOWARD A. MCKNIGHT, M.D.

GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Sager W. W. and Nickel A. C. Localization of Bacteria in Tissues of Lowered Resistance. *Arch Surg* 1929 xix, 1086.

In rabbits which originally gave negative blood cultures abscesses made by the subcutaneous injection of silver nitrate remained sterile.

A number of such abscesses became infected secondarily following the intravenous injection of bacteria.

The organism isolated from the abscess resembled the organism originally introduced intravenously and had the same elective localizing power.

These results may explain why clean surgical wounds sometimes become infected.

Campos E. De S. Experimental Congenital Chagas Disease (Moletia de Chagas congenita experimental). *Bol Soc de med e cirurg S Paulo* 1929 xiii 289.

A female dog was inoculated on July 18 1927, when she was nine months old with trypanosoma cruzi taken from a male dog infected experimentally which died with extensive encephalomyelitis myocarditis and nephritis. This female dog whose blood was negative after September 1927 when the acute stage of the infection was over transmitted the infection to the offspring of her first two pregnancies, one of which began seven months and the other of which began nineteen months after the date of the infection. The puppies were born alive but died from five to forty five days after birth. The histological findings were the same as those in the male dog from which the parasites were obtained.

Another female dog which was inoculated April 10, 1928 with the blood of one of the puppies with congenital infection gave birth on May 30, 1929 more than a year after the infection when her blood was negative to three puppies with trypanosomes in the blood and the inflammatory processes characteristic of Chagas disease in the central nervous system heart and other organs. On September 12 1929 four days before this report was made she gave birth to a third litter with many parasites in the blood. One of the puppies of the third litter which died two days after birth showed foci of inflammation in the brain containing the flagellate forms of the parasite.

As the two female dogs used in these experiments were in the chronic stage of the disease with no parasites in the blood and were bred with healthy males the author concludes that the protozoa lodged in the tissues and were transmitted to the fetuses through the placenta.

AUDREY G. MORGAN, M.D.

sickness are urticaria rash, rise of temperature for forty eight hours albuminuria cylindruria, and leucocytosis. Optic neuritis and polyneuritis may follow. Relapses of serum sickness have been noted.

Following injections of sera precipitins for horse serum appear in the circulation after an interval of from nine to twelve days. When the concentration is sufficiently high to react with the horse serum in the blood symptoms of serum sickness occur. In severe serum sickness the titer of the precipitins in the blood is usually high and there is rapid disappearance of the horse serum from the blood. In persons who tolerate large doses without serum sickness precipitin occurs in small amounts or not at all and the horse serum may be present in the circulation for months.

Serum accidents may be mild or severe. They may appear after an interval of a half an hour or even before the needle is withdrawn. Two groups of persons are subject to such a reaction. One group are the known as horse asthmatics who suffer from asthma or rhinitis when exposed to horse dander. Among these may be found some who give a positive skin test to horse serum but who have never had asthma. The other group is made up of persons who have become sensitized to horse serum through previous serum treatment. While a percentage of those given toxin antitoxin immunization may give a positive skin reaction for serum the danger of serum sickness is not great and no deaths have been reported from such circumstances. It has been shown however that persons given a therapeutic dose of serum usually become sensitized and severe and even fatal accidents have followed subsequent injections of serum. However only a small percentage of persons artificially sensitized reach a dangerous degree of sensitization. All available records show but a small number of fatal results.

Persons sensitive to horse serum may be identified from a history of asthma or allergic rhinitis. A history of previous serum treatment should put the physician on his guard. In all suspected cases a skin test consisting of an intradermal injection of 0.05 c cm of a 1:10 dilution of the serum should be made. If the reaction is positive at the end of a half hour there is an increase in the size of the injection wheal with an area of erythema about it. The projection of pseudopods from the wheal denotes a high degree of sensitivity. The conjunctival test is also of value.

In man desensitization cannot be obtained with the promptness with which it can be obtained in laboratory animals. In the presence of a strongly positive skin test, the first injection of serum should be made subcutaneously and should not exceed 0.1 c cm. If no untoward symptoms occur the dose may then be doubled every thirty minutes until 1 c cm. is given. After the usual interval if no reaction is noted, 0.1 c cm. may be given intravenously. At intervals of twenty minutes this dose may be doubled until the required amount of serum is given. Epinephrin should always be at hand to control a pos-

sible reaction and should be used repeatedly when needed. It is a good rule never to make the first intravenous dose of serum more than one-tenth the last subcutaneous dose. WILLIAM J. JACKET, MD.

Adam L. Emphysematous Tumors of the Organismus (Ueber die Luftgeschwulste des Organismus). 15 Verhandl. d. ungar. Gesellsch. f. Chir. 1929.

The author reviews the emphysematous tumors with which he has had experience. He describes their types and discusses their significance. In reporting the case of a soldier with a skull injury followed by the appearance of air in both lateral ventricles of the brain he describes the clinical manifestations of the intracerebral pneumocyst or pneumalocephalus and the intracranial but extracerebral pneumatocele and their treatment. He discusses also diagnostic cephalography and the accumulation of air in the subarachnoid space or the ventricles of the brain after endolumbar pneumography. He cites a case in which operation for recurrent goiter was followed by death from air embolism arising in the basilar artery.

Also included in the discussion are glass blower's pneumatocele, subcutaneous emphysema following tracheotomy, the significance of open and closed pneumothorax, the pneumothorax resulting from valve-like injuries of the lungs and bilateral pneumothorax resulting from bilateral operations for empyema. For such conditions Adam recommends very highly the aspiration apparatus devised by his assistant Jaeger. He discusses also the effect of air in the abdominal cavity from perforations and gas forming bacteria and the value of diagnostic pneumoperitoneum. As showing the importance of gas forming micro-organisms he cites a case of cystoid pneumatosis of the cecum and ascending colon in a man forty eight years of age in which no ulcerations or mechanical explanation for the entrance of air could be found. In another of his cases nephrectomy was followed by the formation of a pneumatic cyst the size of two fists about the ureteral stump. He reports also a case in which through a connection between the urogenital sinus and the rectum that had persisted since fetal life in the form of Reichel's cloaca gas from the rectum and sometimes faces emptied directly into the bladder. He exposed this fistula by the sacral route, incised it and buried it after another surgeon had failed to close it through the perineal route.

Adam concludes his article with the observation that the pathological presence of air in the organism is sometimes an important diagnostic sign, sometimes a severe complication and sometimes the indication of a fatal termination. VON LOBMYER (2).

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DUCTLESS GLANDS

Teel H M The Effect of the Growth Principle of the Hypophysis on the Female Genital Tract with the Report of the Hypertrophic Changes in a Case of Acromegaly *Endocrinology* 1939 3:115-121

Evans and his co workers rendered it possible to study hypophyseal overactivity experimentally by demonstrating that the anterior lobe of the hypophysis can be administered intraperitoneally

In rats the intraperitoneal administration of an extract of the anterior lobe of the hypophysis resulted in gigantism and a marked increase in the size of the ovaries with extensive luteinization of the walls of the graafian follicles The uterus and vagina showed only a slight change In dogs the use of the extract was followed by overgrowth of the animals an increase in the size of the ovaries to several times the normal and a marked increase in the size of the uterus and vagina but there was no luteinization

These results may be explained by assuming that there are two hormones in the hypophysis one of which is the growth principle and the other of which is the hypophyseal sex hormone The growth hormone would explain the increase in the size of the dog's uterus and vagina while the hypophyseal sex hormone would explain the ovarian changes found in the rats

In the human being hyperpituitarism is usually associated with adenomata composed of acidophilic cells while according to Smith and Engle the cells responsible for stimulation of the gonads are basophilic cells Accordingly it would be logical to assume that in the case of a woman with an acidophilic adenoma and marked acromegaly without amenorrhoea there is an excess of only the growth producing principle of the gland

This assumption is substantiated by the findings in a woman forty two years of age who had had acromegaly for two years and in whom the X ray showed definite expansion of the outlines of the sella together with skeletal changes of acromegaly elsewhere Radiation of the hypophysis was followed by almost immediate improvement in the acromegaly but two months after the treatment menorrhagia occurred for the first time the uterus was found to be as large as a grapefruit the external genitalia were more vascular larger and thicker than before the labia were redundant, and there seemed to be considerable vascular stasis At operation performed four months after the initial X ray treatment of the hypophysis the genital tract was found markedly hypertrophied and congested All of the pelvic organs were congested and hypertrophied except the ovaries which were of normal size Microscopically the uterus showed hypertrophy with hyperplasia of the endometrium and polyp formation The ovaries showed only a few simple cysts

The findings in this patient resembled in many respects the findings in the dog with experimental acromegaly namely hyperplasia of the entire genital tract without striking histological changes in the ovary This observation suggests that in the female the growth promoting principle may produce marked hyperplasia of the genital tract as well as the usual gigantism SAMUEL J FOGELSON MD

Cole L Parathyroid Tetany and Cataract *Lancet* 1939 October 13

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